A REVISION OF THE GENUS *MASALIA* (LEPIDOPTERA : HELIOTHIDINAE)

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SYNOPSIS

The genus *Masalia* Moore is recalled from synonymy and fully revised. A key is given to the 38 species (three new) and 31 subspecies (five new) recognized as valid. Seventeen specific and two subspecific synonyms are newly established.

MATERIAL STUDIED

The large collection of Heliothidine moths in the British Museum (Natural History) formed the nucleus of the material used for this revision. Type and other important material was borrowed from collections in the following museums:

Musée Royal de l'Afrique Centrale, Tervuren (MRAC, Tervuren); Museo Civico di Storia Naturale, Genoa (MCSN, Genoa); Museum Alexander Koenig, Bonn (MAK, Bonn); Muséum National d'Histoire Naturelle, Paris (MNHN, Paris); Naturhistoriska Riksmuseet, Stockholm (NR, Stockholm); University Museum, Oxford (UM, Oxford); Museum für Naturkunde der Humboldt-Universität, Berlin (MNHU, Berlin); and Zoologisches Sammlung des Bayerischen Staates, Munich (ZSBS, Munich).

The abbreviations given in brackets are those used throughout the text in listing the material examined.

Specimens were examined of all the species placed in *Timora* Walker, 1856, the genus from which *Masalia* has been extracted and with which it was previously

synonymized. Other species within the subfamily with affinities to *Timora* were also investigated. Except for four, all the holo- or lectotypes of valid names and synonyms now included in *Masalia* have been seen. The four exceptions were *M. epimethea* (Viette), *M. prochaskai* (Viette), *M. leucosticta vinula* (Berio) and *M. lancea* (Berio); for each of these an author-verified specimen was examined and paratype photographs were seen of *vinula* and *lancea*.

ACKNOWLEDGEMENTS

I wish to thank the following specialists for their kindness in lending type and other material: Mons. L. A. Berger, Belgium; Dr E. Berio, Italy; Dr J. Bourgogne, France; Dr H. J. Hannemann, Germany; Mr E. Taylor, England; and Dr E. Todd, U.S.A.

I am also most grateful to Dr W. Forster, Germany; Dr G. Hallin, Sweden; and Dr P. Viette, France, who, in addition to lending material, have given help with this paper in many other ways.

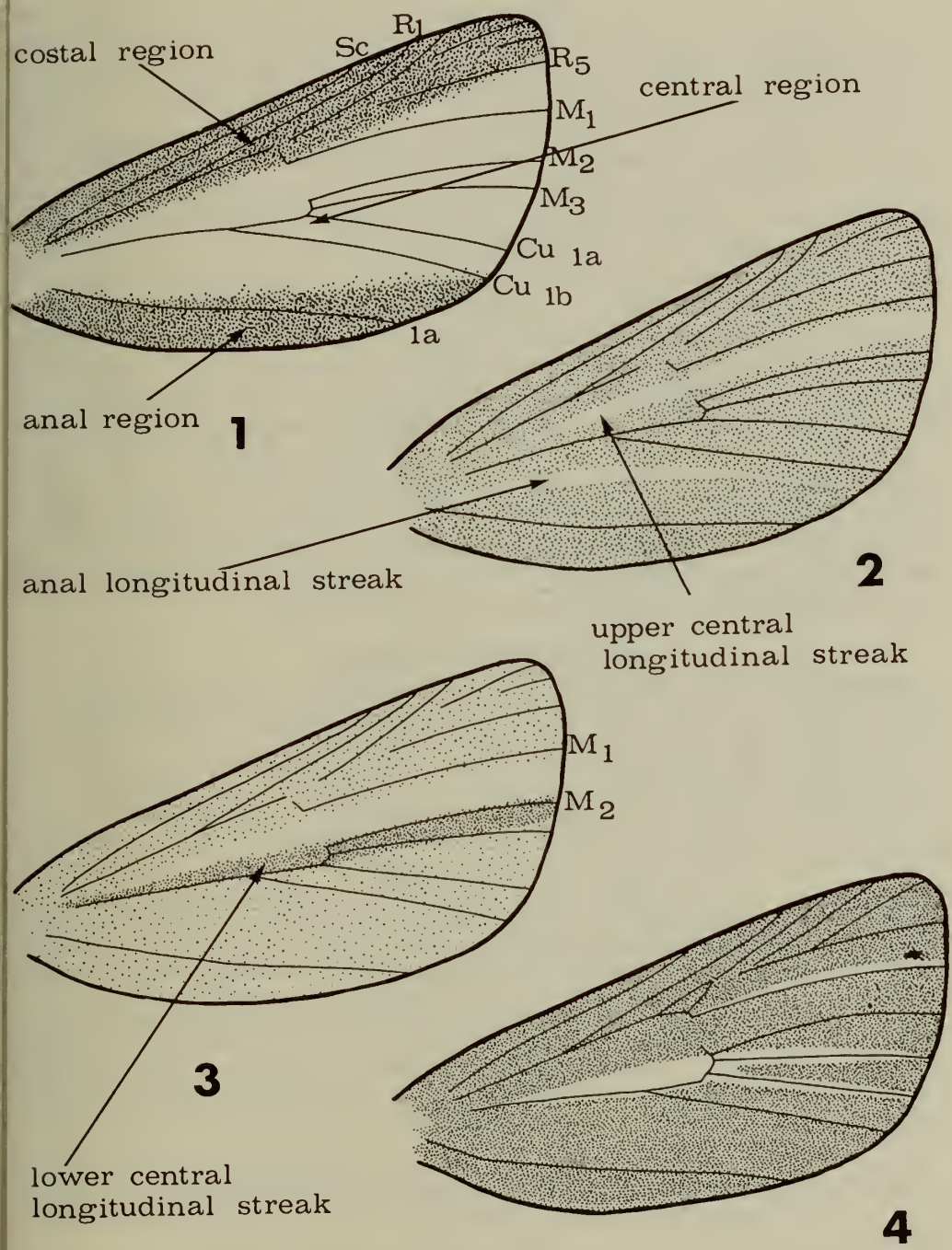
TREATMENT

The layout of the accounts of the species and subspecies has been standardized and arranged in the following sequence: fore and hind wing, genitalia, material examined, distribution, and remarks (diagnosis and comment). Mention is made of the antennae, proboscis quotient and 8th abdominal tergum only when these differ from the norm or, in the case of the antennae, when they are sexually dimorphic. The 'proboscis quotient' is the length of the proboscis divided by the length of the long axis of the eye.

The presence or absence of an areole in the fore wing and the fore wing length are stated; the latter is measured from the fore wing apex to the centre of the mesothorax. The measurements given are in millimetres and are for the smallest and largest specimen of each sex; the number of specimens checked is given in parentheses. Holotype and lectotype measurements have also been included in order to give a standard set of figures, for in a number of the earlier descriptions the points between which measurements were taken was not stated.

Three fore wing regions are recognized: costal, central and anal (shown against fore wing veins in Text-fig. 1). In the descriptions of the pattern, 'upper central longitudinal streak' refers to the streak passing through the radial half of the cell and beyond between M_1 and M_2 (Text-fig. 2); 'lower central longitudinal streak' refers to the streak passing through the cubital half of the cell and beyond between M_2 and M_3 (Text-fig. 3); 'anal longitudinal streak' refers to the streak following the anal fold (Text-fig. 2). The colour terms used refer to the general names given in the colour diagrams of Methuen's 1967 *Handbook of Colour*.

The fore and hind wing upper surface of each species and subspecies has been illustrated by a photograph. Illustrations of variants to indicate the range of variation of wing-pattern found are also included (sex-linked variation is indicated). For the illustrations fresh, well marked specimens were given preference over faded or worn types.



FIGS 1–4. Fore wing longitudinal markings of *Masalia* and their terms. 4, forked lower central longitudinal streak.

The male genitalia is illustrated by figures of the scobinate bar and proximal end of the vesica (Text-fig. 14). Differences centre on bar-shape and on the size and number of spicules. Differences occur both inter- and intraspecifically, and between a number of species there is overlapping variation. Although the diagnostic value of these characters is thereby reduced they are nevertheless particularly important in aiding identification of male specimens, since in the key female characters are often used. Figures of the scobinate bar of all species are included to provide a comparative set. Extremes have been chosen for species having a wide degree of bar variation, whilst for others a typical representative specimen has been used. For the female, figures are given showing the lateral view of the papilla analis of the species and subspecies in which the papilla analis is modified in form.

The data of specimens examined are listed. The information has been taken from their attached labels and, in the case of type-material, from the original descriptions where additional information is recorded. The locality data of type-material is stated as given on the specimen, but changes in country or regional name and in spelling (where traced) have been inserted in square brackets. The changes and alteration to spelling are based on names in the 1965 *Times Index-Gazetteer of the World* and on current usage in African countries whose names have since changed. Other material has been listed geographically to country (using the current country-names) and alphabetically to locality. Unless otherwise stated specimens are in the collection of the British Museum (Natural History).

MASALIA Moore **gen. rev.**

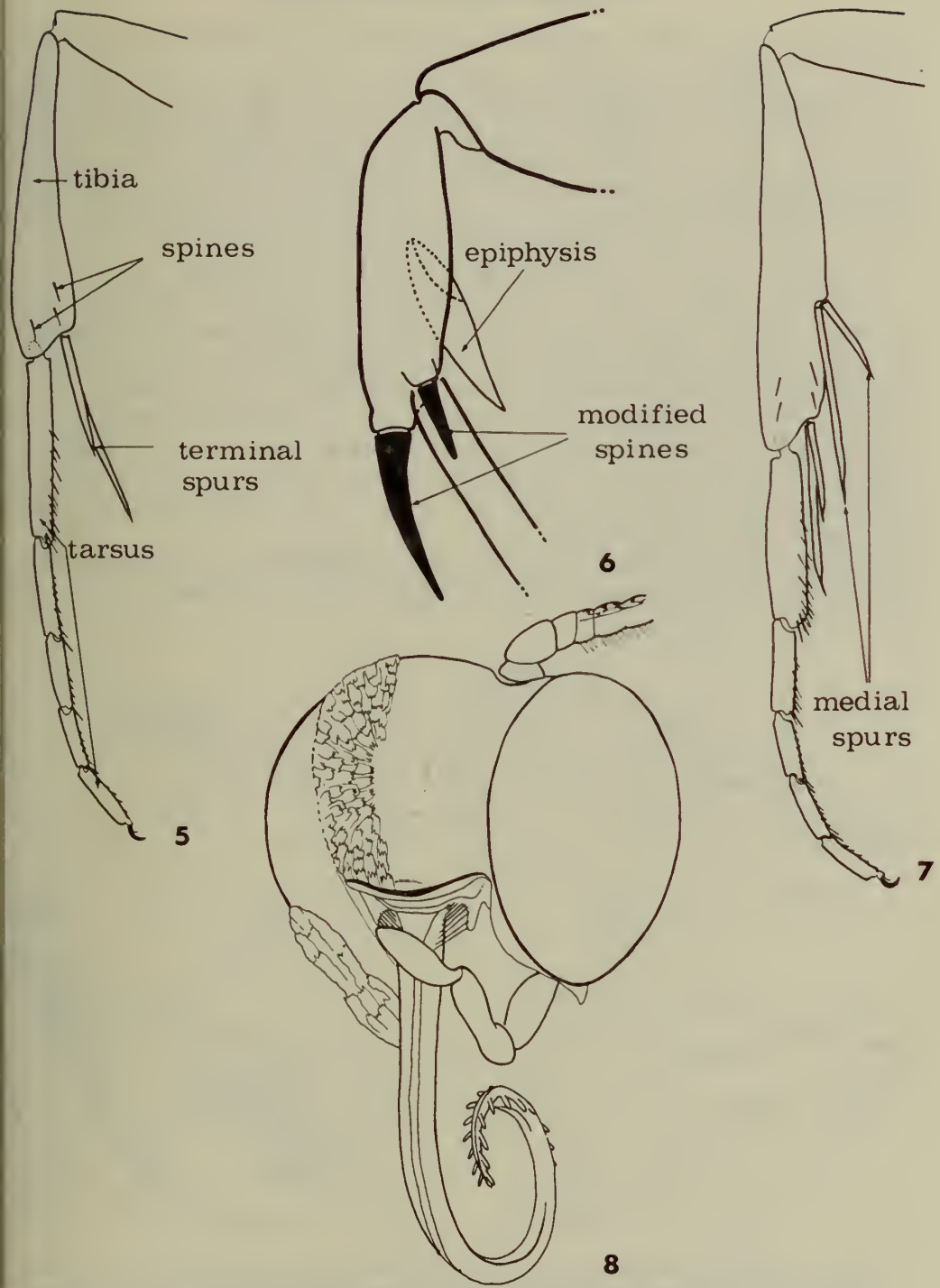
Masalia Moore, 1881: 364. Type-species: *Masalia radiata* Moore, by original designation.
Pradatta Moore, 1881 : 364. Type-species: *Pradatta beatrix* Moore, by original designation. [Synonymized with *Timora* Walker by Hampson, 1903 : 103.]
Curubasa Moore, 1881 : 366. Type-species: *Alaria lanceolata* Walker, by original designation. [Synonymized with *Timora* Walker by Hampson, 1903 : 103.]
[*Timora* Walker; Hampson, 1903 : 103. *Masalia* Moore synonymized with *Timora* Walker.]
Lecerfia Dumont, 1920 : 102. Type-species: *Lecerfia chitinipyga* Dumont, by monotypy. [Synonymized with *Timora* Walker by Draudt, 1935 : 197.]

Redescription. *Head.* Clypeus differentiated into a bulbous plate extending well forward from the eyes and a ventral upcurved semicircular plate with a dorsal protruding lip (Text-fig. 8), the bulbous plate clothed in short adpressed, hair-like scales, and the ventral plate glabrous. Proboscis short, proboscis quotient from 2, but only exceptionally exceeding 3; distally bearing numerous well developed sensory papillae. Antenna with 50 to 60 flagellar segments.

Thorax. Prothoracic tibia with an epiphysis and a terminal pair of large modified spines, of which the inner is the shorter (Text-fig. 6), or occasionally with a single modified spine; otherwise without spines. Mesothoracic tibia with a terminal pair of subequal spurs and from 1 to 6 spines distad (Text-fig. 5). Metathoracic tibia with a terminal and medial pair of subequal spurs and from 1 to 6 spines distad, spines restricted to below level of medial spurs (Text-fig. 7).

Wings. Fore wing venation with *Sc*, R_1, M_1, M_2, M_3, Cu_{1a}, Cu_{1b} and 1*A* as in Text-fig. 9. 2*A* usually absent; when present, weakly developed and anastomosing proximally with 1*A*. R_2 to R_5 present, arrangement variable. Areole present or absent; when present, between R_2 and R_{3+4} or R_2 and R_{3+4+5}.

Hind wing venation with $Sc + R_1$ anastomosing proximally or approximating with *Rs*. M_2 absent (Text-fig. 9). *Rs* and M_1 either divided or stalked from lower angle of cell; venation otherwise constant.



FIGS 5–8. Structures of *Masalia*. 5, mesothoracic leg. 6, tibia of prothoracic leg. 7, metathoracic leg. 8, head capsule, fronto-lateral view.

Abdomen. Posterior margin of eighth abdominal tergum from straight to centrally emarginate (Text-figs 20, 21).

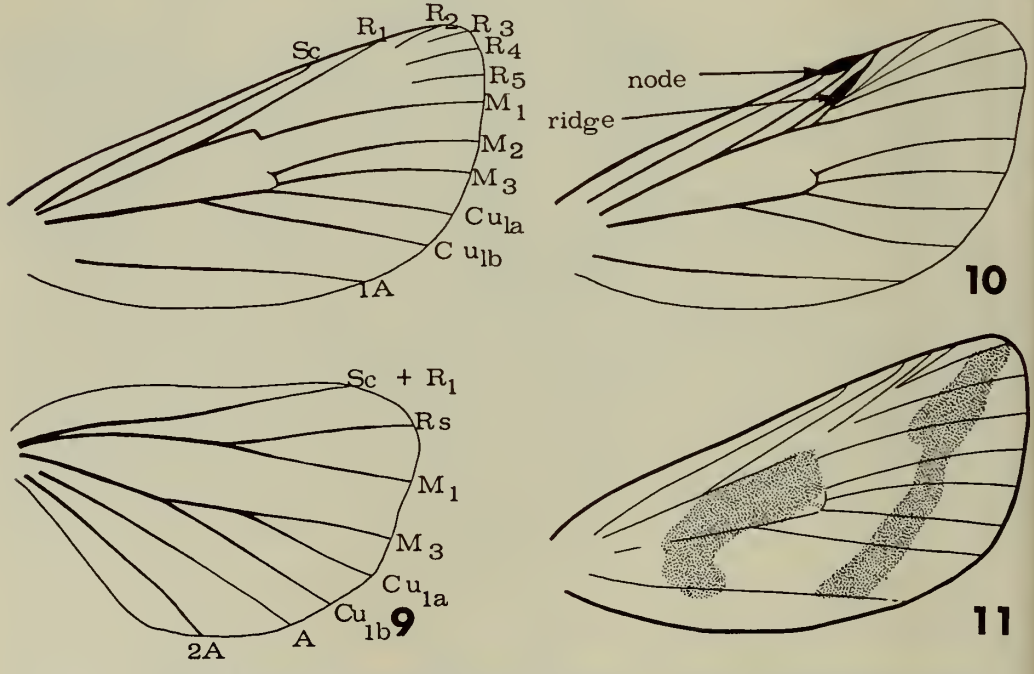
Genitalia. Male with uncus simple, terminally hooked; valve simple, apically slightly dilate, corona spiculate (Text-figs 12, 13). Aedeagus with apex obliquely truncate with a scobinate bar; vesica membranous, slightly spiral and with a scale-like cornutus (Text-fig. 14). Female papilla analis either simple [i.e., membranous and rounded] (Text-figs 15, 16), or modified [sclerotized] and of variable shape being rounded, folded, angled or digitate (Text-figs 17–19). Ductus bursae elongate, corpus bursae with 1 to 4 signa and an appendix bursae; ductus, corpus and appendix bursae membranous, simple or ribbed (Text-figs 15, 18).

DIAGNOSIS. Vesica in males with a proximal scale-like cornutus.

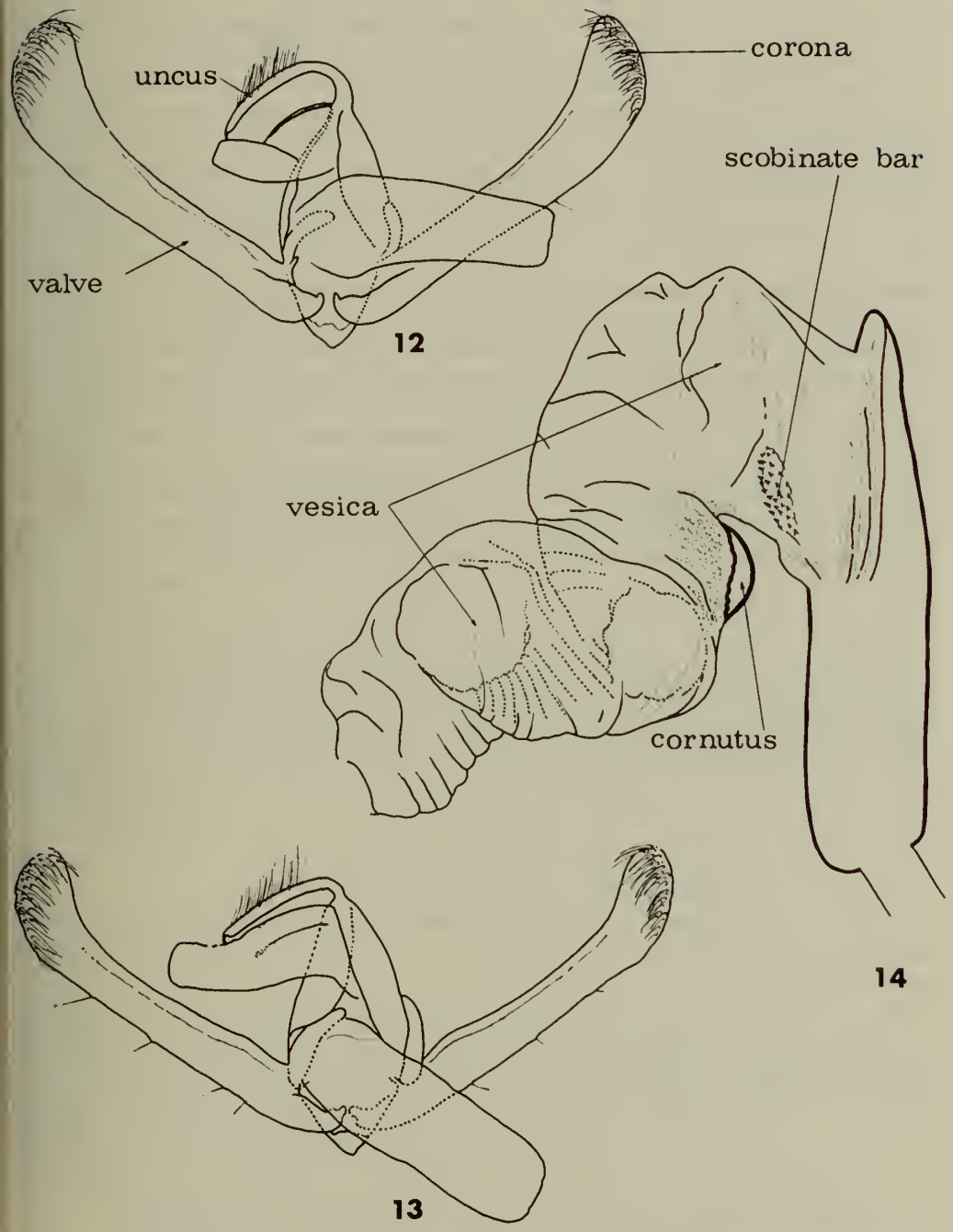
HISTORICAL SURVEY. Moore (1881) erected the genus *Masalia* for two new species *M. radiata* and *M. irrorata*, designating the former as type-species. The second of these two species is now assigned to *Timora* Walker. Moore's paper is descriptive but not diagnostically orientated and reflects a disregard of earlier work.

Masalia was synonymized with *Timora* by Hampson at the beginning of the century and has remained a synonym of it until the present paper. Hampson's revision of *Timora* was important in bringing together a number of naturally related species but, unfortunately, the characters chosen to distinguish species of *Timora* from other genera are inadequate.

Later revisions of *Timora* by Warren (1911, 1913) and Gaede (1935) closely followed the work of Hampson. The names of species subsequently described in



FIGS 9–11. Wing structures and markings of *Masalia*. 9, fore and hind wing venation. 10, *M. perstriata* ♂, fore wing venation. 11, transverse wing markings typical of *decorata*-group species.



FIGS 12–14. Structures of male genitalia of *Masalia*. 12 and 13, valves. 14, aedeagus with everted vesica.

Timora were brought together, but there was much confusion, for few types and little material had been examined. Recent relevant papers are concerned with descriptions of new species and are widely scattered in the literature.

Hampson's (1903) synonymy of *Masalia* with *Timora* was primarily based on prothoracic tibial features, namely the absence of spines except for a single or pair of terminal modified spines. On examining Heliothidine material in the collection of the British Museum (Natural History), the same type of prothoracic tibia was found in nine other genera; the number of species involved was comparatively few (29) but sufficient to discount the value of the prothoracic tibial features at the generic level. Unfortunately, no satisfactory combination of characters could be found to separate *Timora* sensu Hampson from other related genera.

Following investigation of the male genitalia, a scale-like cornutus was found at the proximal end of the vesica in a number of species assigned to *Timora* (but absent in the type-species, *Timora senegalensis* (Guenée). In these species, the cornutus was present in all the specimens examined and was similar in appearance from one species to another and though irregular in form, varied only slightly in position relative to the scobinate bar. On the presence of a cornutus and similarity of other characters these species are regarded as comprising a genus for which the name *Masalia* is recalled from synonymy. Within the Heliothidinae, the vesical armature has been found diagnostic in two other genera, *Helicoverpa* Hardwick, 1965, with a helical row of spicules or spicule clusters, and *Adisura* Moore, 1881, with a small number of elongate terminal spicules.

Generic affinities and distribution. *Masalia* has affinities with *Timora*, *Adisura* and *Canthylidia* Butler, 1886, but differs from them in the presence in the male of a scale-like cornutus. As in *Masalia* the prothoracic tibia in *Timora* and a number of species of *Canthylidia* has one or a pair of subequal apical modified spines. In *Masalia* and *Timora* the prothoracic tibia is otherwise unspined. In *Canthylidia* there is often one modified spine, but this may be absent. In *Adisura* the prothoracic tibia is devoid of modified spines, but other spines are usually present. In all four genera the proboscis is short; in *Masalia* and *Timora* the quotient is usually 2–3; in *Adisura* and *Canthylidia* usually between 3 and 4.

Masalia is distributed across Africa, the Malagasy Republic, Saudi Arabia, southern Iran, West and East Pakistan, India, Ceylon, China, Lombok, Flores, and northern Australia.

Groups within the genus. Although there is much structural uniformity within the genus, differences in wing pattern and colouring are quite marked. Shared and differing characters are met with in an assortment of combinations. A number of species-groups are recognized, but it is not suggested that they are entirely natural, for some of the characters used may well be affected by parallel evolution.

The *fissifascia*-group. Two species, *philbyi* and *fissifascia*, characterized by a white, distally forked, lower central longitudinal streak on the fore wing (Text-fig. 4). Distribution: East Africa, Saudi Arabia, southern Iran and Afghanistan.

The *decorata*-group. The species are *decorata*, *leucostica*, *funebris*, *prochaskai* and *sublimus*; fore wing with transverse rather than longitudinal markings and with

pink (or red) and yellow colouring (Text-fig. 11). Distribution: Africa, Malagasy Republic, Afghanistan, India and Ceylon.

The *galatheae*-group. The species are *distincta*, *cruentata* and *galatheae* (the latter two being regarded as a species-complex); fore wing with the costal and anal regions pink, and central region white to yellowish white. Although their fore wings are white, *flaviceps* and *hololeuca* are also included. In a few specimens of *flaviceps*, almost imperceptible demarcation between the costal, central and anal regions can be traced, revealing the pattern found in *galatheae*. *M. hololeuca* and *M. flaviceps* are the only species within the genus having white fore wings. Distribution: Africa, India and China.

The *radiata*-group. The species are *radiata*, *rubristria*, *beatrix*, *epimethea*, *rosacea*, *roseivena* and *flavistrigata*; fore wing with the costal and anal regions, and parts of central region, reddish brown to brown, with a yellowish white, upper central longitudinal streak and usually with an anal streak of the same colour. Distribution: Africa, Malagasy Republic, India, Lombok, Flores and northern Australia.

M. latinigra and *M. cheesmanae* are regarded as a species complex characterized by a single modified spine on the prothoracic tibia. Distribution: Africa.

M. albida, with its long proboscis (proboscis quotient 6) and distinctive pattern, and *M. perstriata*, also with a long proboscis and node-like distension of the costa of the fore wing (Text-fig. 10), are species distinct from each other and from others within the genus.

The remaining species do not fit into convenient groupings.

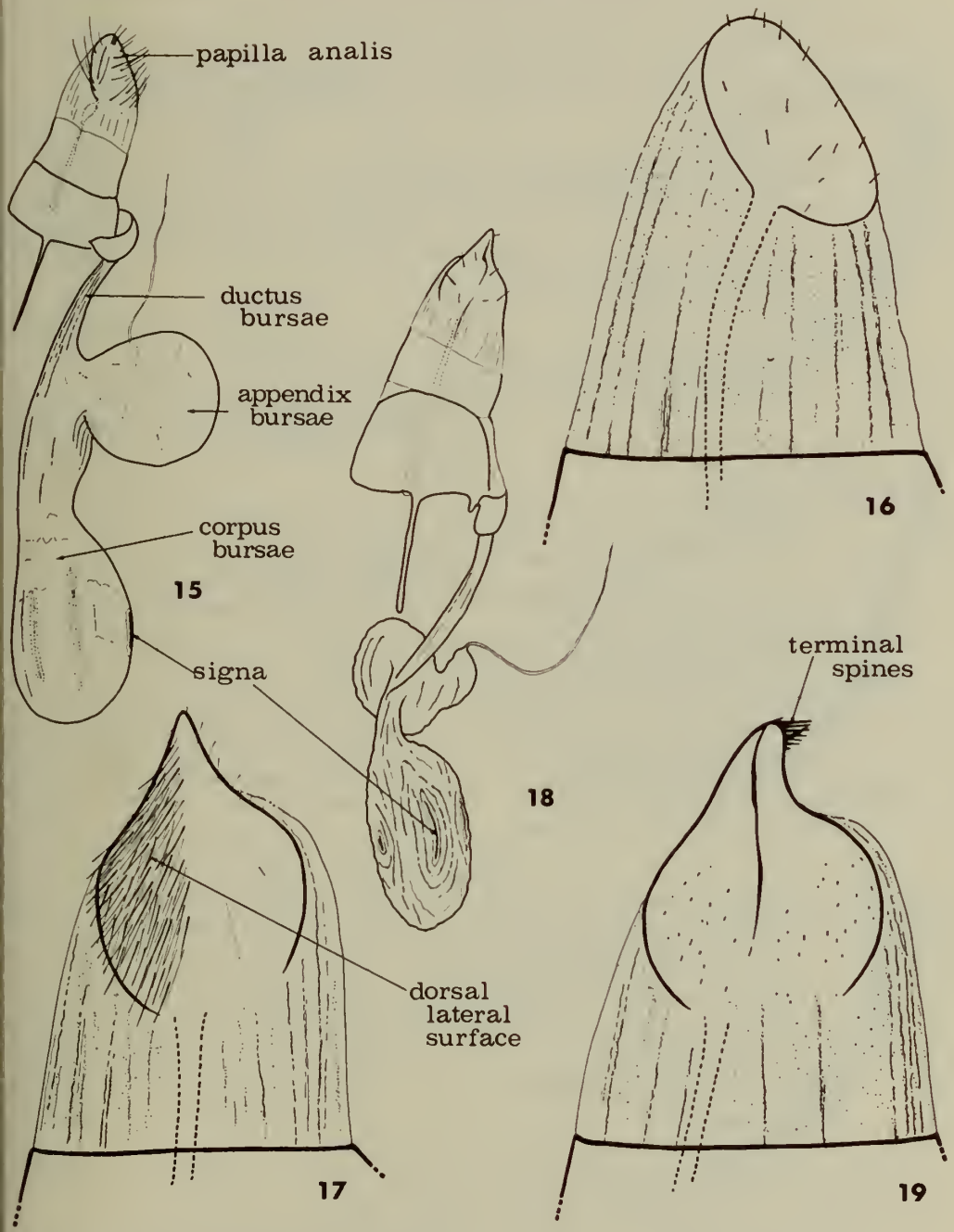
Distribution. The genus is predominantly Afro-Indian. Of the 38 species, 15 are African endemics and 15 endemic to India (one extending northwestward into China). A further four species occur both in Africa and India (one also occurring in Ceylon). Of the remaining four, three occur in the Malagasy Republic, the fourth being found in northern Australia and the islands Lombok and Flores, near northern Australia.

KEY TO THE SPECIES AND SUBSPECIES

The taxonomic features of the Heliothidinae suggest that a large number of species have undergone recent speciation. There is a high degree of structural uniformity within the subfamily, and marked superficial variation within species; the species are separated by only slight discontinuities. The key has been constructed as far as possible on the basis of non-sexual characters, but the use of the papilla analis of the female and, less often, the aedeagus and antennae of the male has been unavoidable in some couplets. Because of the limited number of structural characters, pattern and colour have been widely used.

1	Fore wing upper surface with a white to yellowish white upper central longitudinal streak as in Text-fig. 2 or with a forked lower central longitudinal streak as in Text-fig. 4	2
–	Fore wing upper surface without a white upper, or forked lower, central longitudinal streak	22

2 (1) Fore wing upper surface with a white forked lower central longitudinal streak (following Cu_1 and dividing with it along M_3–Cu_{1a}) 3
– Fore wing upper surface without a white forked lower central longitudinal streak 5
3 (2) Fore wing upper surface light yellow to brownish orange. (Arabian, Iranian or Afghanistan species) . . . . . ***M. philbyi*** (Brandt) (p. 19)
– Fore wing upper surface greyish red. (East African species) 4
4 (3) Fore wing upper surface with the white forked streak outlined with light brown. ***M. fissifascia fissifascia*** (Hampson) (p. 23)
– Fore wing upper surface with the white forked streak not outlined with light brown . . . . . ***M. fissifascia roseata*** (Pinhey) (p. 24)
5 (2) Fore wing with areole 6
– Fore wing without areole 18
6 (5) Madagascan, African, Arabian or Iranian species 7
– Indian species 13
7 (6) Madagascan species.
Fore wing with pointed apex (Text-fig. 23); upper surface brownish orange, costal margin white . . . . ***M. epimethea*** (Viette) (p. 61)
– African, Arabian or Iranian species 8
8 (7) Female genitalia with unmodified papilla analis (membranous and of rounded shape) (Text-figs 15, 16) 9
– Female genitalia with modified papilla analis (sclerotized and of variable shape, rounded, folded or digitate) (Text-figs 17, 18, 19) 12
9 (8) Fore wing upper surface with costal region pastel to greyish red; central region white, with a dark brown to black, lower central longitudinal streak, and a faint to well developed dark brown to black streak between R_5 and M_1 (Pl. 6, figs 177, 178) . . . ***M. beatrix trifasciata*** (Hampson) (p. 61)
– Fore wing upper surface with costal region pale yellow to greyish orange . 10
10 (9) Abdomen with posterior margin of 8th tergum ridged and centrally emarginate (Text-fig. 20).
Fore wing upper surface with a white anal longitudinal streak and with faint to well developed white streaks between M_2 and M_3, between M_3 and Cu_{1a}, and between Cu_{1a} and Cu_{1b} (Pl. 10, figs 223, 224).
M. albida (Hampson) (p. 93)
– Abdomen with posterior margin of 8th tergum not ridged; straight or centrally only slightly emarginate (Text-fig. 21) 11
11 (10) Hind wing upper surface light to yellowish brown.
M. rubristria rhodomelaleuca (Berio) (p. 58)
– Hind wing upper surface white.
M. perstriata fuscostriata (Brandt) (part) (p. 96)
12 (8) Fore wing apex rounded (Text-fig. 22). Female genitalia with surface of papilla analis spiculate (striate appearance); dorso-laterally not sericate, as in Text-fig. 86 . . . . . ***M. terracottoides*** (Rothschild) (p. 75)
– Fore wing apex pointed (Text-fig. 23). Female genitalia with surface of papilla analis not spiculate but dorso-laterally sericate, as in Text-fig. 72.
M. flavistrigata (Hampson) (part) (p. 65)
13 (7) Australian species.
Fore wing upper surface with a pink (or pink suffused with reddish brown) lower central longitudinal streak; costal and anal regions pink, central region white . . . . . ***M. roseivena*** (Walker) (p. 63)
Indian species 14
14 (13) Female genitalia with unmodified papilla analis (membranous and of rounded shape) (Text-figs 15, 16) 15



FIGS 15–19. Structures of female genitalia of *Masalia*. 15 and 16, papilla analis simple (membranous and rounded). 17–19, papilla analis modified (sclerotized).

– Female genitalia with modified papilla analis (sclerotized and of variable shape, rounded, folded, or digitate) (Text-figs 17, 18, 19) 16

15 (14) Female genitalia with papilla analis of right-angle triangular shape (Text-fig. 93). Fore wing upper surface light greyish or brownish orange; marginal cilia with banded appearance, proximally brownish orange, distally white, colour separated by a well defined line as in Pl. 8, figs 208, 209.
M. tosta Moore (part) (p. 80)

– Female genitalia with papilla analis not of right-angle triangular shape. Fore wing upper surface with costal, central and anal regions light orange to pastel-red or with central region white with light red to pastel-red streaks.
M. beatrix beatrix (Moore) (part) (p. 59)

16 (14) Fore wing upper surface pinkish white. Female genitalia with terminal spines on the papilla analis (Text-fig. 19).
Hind wing upper surface reddish golden brownish orange.
M. rosacea Hampson (p. 62)

– Fore wing upper surface pale yellow, light to brownish orange or light brown. Female genitalia without terminal spines on the papilla analis (Text-fig. 18) 17

17 (16) Hind wing upper surface either white or greyish to brownish orange.
M. radiata terracotta Hampson (part) (p. 52)

– Hind wing upper surface brown . . . ***M. radiata radiata*** Moore (p. 52)

18 (5) African species 19

– Indian species.
Fore wing upper surface pale yellow or light to brownish orange. Hind wing upper surface white or greyish to brownish orange.
M. radiata terracotta Hampson (part) (p. 52)

19 (18) Female genitalia with unmodified papilla analis (membranous and of rounded shape) (Text-figs 15, 16) 20

– Female genitalia with modified papilla analis (sclerotized and of variable shape, rounded, folded or digitate) (Text-figs 17, 18, 19) 21

20 (19) Fore wing upper surface with greyish rose, light brown, brown or reddish brown markings. (West Africa) ***M. rubristria rubristria*** (Hampson) (p. 54)

– Fore wing upper surface with pale to pastel or greyish red markings. (Central, East and southern Africa) . ***M. rubristria transvaalica*** (Distant) (p. 57)

21 (19) Male genitalia with cornutus . ***M. bimaculata cornia*** subsp. n. (part) (p. 90)

– Male genitalia without cornutus.
M. bimaculata pluritelifora (Berio) (part) (p. 90)

22 (1) Prothoracic tibia with a single terminal modified spine (Text-fig. 74) . . 23

– Prothoracic tibia with a pair of terminal modified spines (Text-fig. 6) . . 27

23 (22) Fore wing with rounded apex (Text-fig. 22). Female genitalia with unmodified papilla analis (membranous and of rounded shape) (Text-figs 15, 16) 24

– Fore wing with pointed apex (Text-fig. 23). Female genitalia with modified papilla analis (sclerotized and of variable shape, rounded, folded or digitate) (Text-figs 17, 18, 19) . . . ***M. flavistrigata*** (Hampson) (part) (p. 65)

24 (23) Fore wing upper surface with a distinct broad, dark brown to black lower central longitudinal streak . . ***M. latinigra latinigra*** (Hampson) (p. 68)

– Fore wing upper surface with at most an indistinct narrow lower central longitudinal streak. 25

25 (24) Hind wing with upper surface white to orange-white.
M. cheesmanae cheesmanae subsp. n. (p. 69)

– Hind wing upper surface brownish orange to brown 26

26 (25) Male antenna with simple flagellar segments (Text-fig. 79). (Known only from southern Sudan) . . . ***M. cheesmanae tamburensis*** subsp. n. (p. 70)

– Male antenna with lamellate flagellar segments (Text-fig. 77). (Known only from Ethiopia) . . . . ***M. latinigra dangilensis*** subsp. n. (p. 69)

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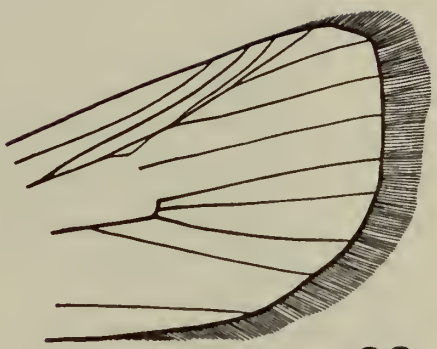

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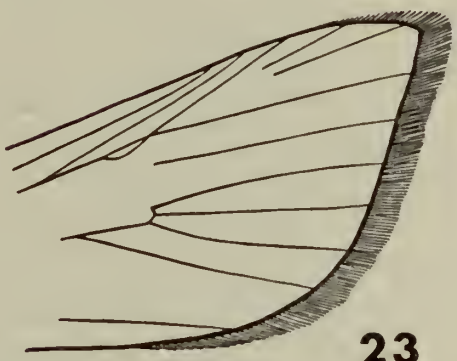

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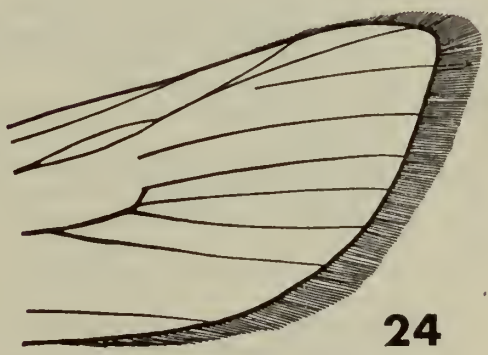

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FIGS 20–24. Structures of *Masalia*. 20 and 21, 8th abdominal terga, dorsal view. 22–24, fore wing apices rounded (22) and pointed (23) and (24).

27 (22) Fore wing upper surface with a series of white postmedial dots or dashes (Text-figs 32, 33) 28
– Fore wing upper surface without a series of white postmedial dots or dashes . 36
28 (27) Fore wing upper surface from light to greyish yellow with distinct pink to red markings 29
– Fore wing upper surface not of this colour and pattern; if the colour of the fore wing upper surface is yellow and greyish red (variety of *M. quilengesi*), the yellow merges almost imperceptibly into the greyish red. 35
29 (28) Fore wing upper surface with the proximal half of the costal region pink to red as in Pl. 2, fig. 129, or light to greyish yellow, traversed by a pink to red longitudinal streak as in Pl. 2, fig. 127 30
– Fore wing upper surface with the proximal half of the costal region light to greyish yellow, not traversed by a pink to red longitudinal streak as in Pl. 1, fig. 124 33
30 (29) African species
– Madagascan species.
Fore wing upper surface with a wide pink longitudinal band occupying nearly the whole costal region (Pl. 2, fig. 132) ***M. prochaskai*** (Viette) (part.) (p. 34)
31 (30) Fore wing upper surface with the post- and antemedial pink markings contiguous, as in Pl. 2, figs 129, 130 32
– Fore wing upper surface with the post- and antemedial pink markings not contiguous, as in Pl. 2, fig. 127 ***M. leucosticta leucosticta*** (Hampson) (p. 30)
32 (31) From northern Tanzania, Kenya, Ethiopia or Somalia. Fore wing usually with areole . . . . . ***M. leucosticta vinula*** (Berio) (p. 32)
– From southern Tanzania or southern Congo (Kinshasa). Fore wing without areole. . . . . ***M. leucosticta joiceyi*** (Prout) (p. 33)
33 (29) From Africa or Arabia 34
– From India.
Male genitalia with scobinate bar and cornutus (Text-fig. 34).
M. decorata decorata (Moore) (p. 25)
34 (33) Fore wing upper surface with post medial dots arranged more or less centrally within the pink to red postmedial band (Text-fig. 32).
M. decorata metarhoda (Druce) (p. 27)
– Fore wing upper surface with postmedial dots arranged along the inner margin of the pink to red postmedial band (Text-fig. 33).
M. decorata albiseriata (Druce) (p. 27)
35 (28) Fore wing upper surface with the costal and central regions bluish red, anal region brown. Hind wing upper surface brown . ***M. funebris*** (Berio) (p. 33)
– Fore wing upper surface light yellow suffused with pastel-red. Hind wing upper surface pale yellow . . . . ***M. quilengesi*** sp. n. (part) (p. 74)
36 (27) Fore wing upper surface with white orbicular and discocellular dots (Text-fig. 25) 37
– Fore wing upper surface without white orbicular and discocellular dots . . 39
37 (36) Fore wing upper surface with anal region pink 38
- Fore wing upper surface with anal region yellowish white.
M. disticta albirosea (de Joannis) (p. 38)
38 (37) Fore wing upper surface with central region yellowish white (Pl. 2, fig. 136).
M. disticta disticta (Hampson) (p. 36)
– Fore wing upper surface with central region pink, apart from a pale yellow basal dash (Pl. 2, fig. 137) . . . ***M. disticta flavirosea*** (Hampson) (p. 39)
39 (36) Fore wing upper surface white or with costal and anal regions yellowish white and central region white 40
– Fore wing upper surface not as above 41
40 (39) Fore wing with areole. (Indian species) . . ***M. hololeuca*** (Hampson) (p. 50)

– Fore wing without areole. (African species) . ***M. flaviceps*** (Hampson) (p. 49)

41 (39) Fore wing upper surface with costal region white, white with margin pink, pale to light yellow, or pink to dull red; central region white or pale to light yellow; anal region light yellow or pink to dull red. Costal and anal regions, or anal region only, of darker colour than central region; otherwise immaculate (Pl. 3, figs 138 to 147 and Pl. 4, figs 150 to 152) 42

– Fore wing upper surface not as above 45

42 (41) Female genitalia with modified papilla analis (sclerotized and of variable shape, rounded, folded or digitate) (Text-figs 17, 18, 19) 43

– Female genitalia with unmodified papilla analis (membranous and of rounded shape) (Text-figs 15, 16) . ***M. galatheae bechuana*** subsp. n. (part) (p. 46)

43 (42) Fore wing upper surface with costal region pink 44

– Fore wing upper surface with costal region white, either immaculate or with costal margin pink . . . . . ***M. cruentata*** (Moore) (part) (p. 47)

44 (43) Female genitalia without terminal spines on the papilla analis (Text-fig. 52). (From north India, Nepal, Tibet or China) ***M. cruentata*** (Moore) (part) (p. 47)

– Female genitalia with terminal spines on the papilla analis (Text-figs 46 to 49). (From India or Africa) . . . ***M. galatheae galatheae*** (Wallengren) (p. 40)

45 (41) Fore wing with areole 46

– Fore wing without areole 63

46 (45) Madagascan, African, Arabian or Iranian species. 47

– Indian species 56

47 (46) Madagascan species.
Fore wing upper surface light yellow with a wide pink longitudinal band occupying nearly the whole costal region (Pl. 2, fig. 132).
M. prochaskai (Viette) (part) (p. 34)

– African, Arabian or Iranian species 48

48 (47) Fore wing upper surface with a light to dark brown lower central longitudinal streak, sometimes distad-splayed (Pl. 9, fig. 218 and Pl. 10, fig. 226) . . 49

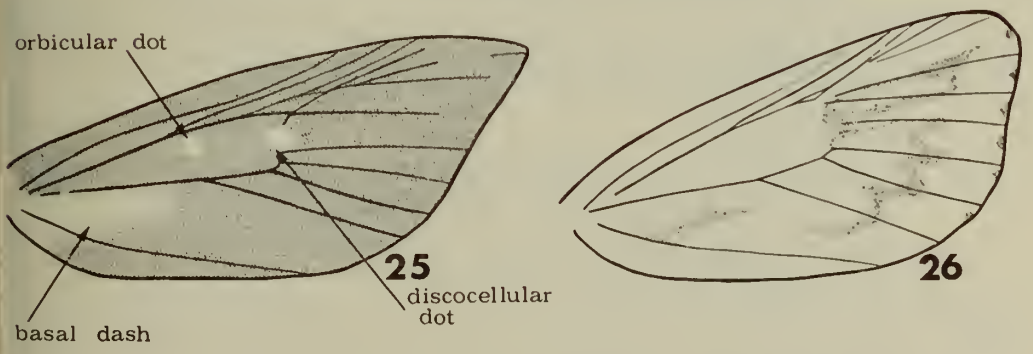
– Fore wing upper surface without a light to dark brown lower central longitudinal streak 51

49 (48) Fore wing upper surface with a brown discocellular spot as in Pl. 9, fig. 218.
M. bimaculata nigrifasciata (Hampson) (part) (p. 87)

– Fore wing upper surface without a discocellular spot 50

50 (49) Fore wing upper surface with brown postmedial and terminal dots (Pl. 10, fig. 230) . . . . . ***M. perstriata zernytamsia*** (Berio) (p. 96)

– Fore wing upper surface with or without brown postmedial dots; brown terminal dots absent . . ***M. perstriata fuscostriata*** (Brandt) (part) (p. 96)



FIGS 25–26. Fore wing markings of *Masalia disticta* (25) and *M. albipuncta* (26)

51 (48) Female genitalia with unmodified papilla analis (membranous and of rounded shape) (Text-figs 15, 16) 52

– Female genitalia with modified papilla analis (sclerotized and of variable shape, rounded, folded or digitate) (Text-figs 17, 18, 19).
Fore wing upper surface from pale to greyish orange, or pastel red through brownish orange to dull red. Anal region immaculate or lightly suffused with greyish brown (Pl. 7, fig. 187) . ***M. flavistrigata*** (Hampson) (part) (p. 65)

52 (51) Female genitalia with the surface of the papilla analis spiculate (striate appearance) (Text-fig. 89).
Fore wing upper surface orange with light brown to brown markings.
M. nubila (Hampson) (p. 77)

– Female genitalia with the surface of the papilla analis not spiculate . . 53

53 (52) Hind wing upper surface light brown to brown.
Fore wing upper surface light orange irregularly irrorate with brown.
M. mittoni (Pinhey) (p. 82)

– Hind wing upper surface yellowish white 54

54 (53) Fore wing upper surface with costal and anal regions light yellow or dull red to greyish pink; central region pale yellow, irrorate with dark brown between veins, as in Pl. 3, figs 148, 149 ***M. galatheae bechuana*** subsp. n. (part) (p. 46)

– Fore wing upper surface not of this colour and pattern 55

55 (54) Fore wing upper surface with an oblique to longitudinal reddish brown to brown dash near the base of the anal region (Text-fig. 26).
M. albipuncta (Hampson) (p. 73)

– Fore wing upper surface without an oblique to longitudinal reddish brown to brown dash near the base of the anal region ***M. quilengesi*** sp. n. (part) (p. 74)

56 (46) Female genitalia with modified papilla analis (sclerotized and of variable shape, rounded, folded or digitate) (Text-figs 17, 18, 19) 57

– Female genitalia with unmodified papilla analis (membranous and of rounded shape) (Text-figs 15, 16) 58

57 (56) Fore wing upper surface orange or greyish orange marked with brownish orange. Female genitalia with the dorso-lateral surface of the papilla analis not sericate (Text-fig. 91) . . . . . ***M. dora*** Swinhoe (p. 78)

– Fore wing upper surface yellowish white to pale orange, often finely irrorate with brown (a brown discocellular spot and brown central longitudinal streak may be present). Female genitalia with the dorso-lateral surface of the papilla analis sericate (Text-fig. 104) . . ***M. bimaculata bimaculata*** (Moore) (p. 87)

58 (56) Female genitalia with papilla analis of right-angle triangular shape (Text-fig. 93).
Fore wing upper surface either light greyish or brownish orange.
M. tosta Moore (part) (p. 80)

– Female genitalia with papilla analis not of right-angle triangular shape . . 59

59 (58) Fore wing upper surface yellowish white to pale yellow with a series of brown postmedial and terminal dots and a poorly differentiated brown lower central longitudinal streak . . ***M. perstriata perstriata*** (Hampson) (p. 94)

– Fore wing upper surface not marked in this way 60

60 (59) Fore wing upper surface with the costal and anal regions light orange to pastel-red; central region yellowish white to pale yellow, streaked with light orange or pastel-red (a light brown to brown lower central longitudinal streak may also be present) . . ***M. beatrix beatrix*** (Moore) (part) (p. 59)

– Fore wing upper surface with the costal, central and anal regions either pale light yellow or greyish orange 61

61 (60) Hind wing upper surface yellowish white with proximad light brown suffusion.
M. semifusca sp. n. (p. 79)

– Hind wing upper surface concolorous 62

62 (61) Male genitalia with 40 or more closely packed spicules on the scobinate bar. (Text-fig. 99) . . . . . ***M. modesta*** (Moore) (p. 84)

– Male genitalia with 20 or fewer sparsely scattered spicules on the scobinate bar (Text-fig. 95) . . . . . ***M. artaxoides*** (Moore) (part) (p. 81)

63 (45) African species 64

– Indian species 69

64 (63) Fore wing upper surface pastel yellow with a greyish pink to dull red oblique dash extending from the apex to the central region (Pl. 2, figs 133, 134). ***M. sublimis*** (Berio) (p. 35)

– Fore wing upper surface not of this colour and pattern 65

65 (64) Fore wing upper surface with a brown to dark brown lower central longitudinal streak (Text-fig. 3) 66

– Fore wing upper surface without a brown to dark brown lower central longitudinal streak 67

66 (65) Fore wing upper surface with the costal and anal regions pale to dull red; central region yellowish white to light yellow with the red colouring occasionally extending in from the costal and/or anal region; with or without brown irroration . . . ***M. bimaculata nigrifasciata*** (Hampson) (p. 87)

– Fore wing upper surface with the costal, central and anal regions white, pale yellow, greyish orange or reddish grey, irrorate with brown. ***M. bimaculata cornia*** subsp. n. (part) (p. 90)

67 (65) Female genitalia with terminal spines on the papilla analis (Text-fig. 19). Fore wing upper surface pale to greyish orange with a faint brown discocellular spot. . . . . ***M. flavocarnea*** (Hampson) (p. 92)

– Female genitalia without terminal spines on the papilla analis . . . 68

68 (67) Male genitalia with a cornutus. Fore wing upper surface yellowish white to pale or greyish orange . . ***M. bimaculata cornia*** subsp. n. (part) (p. 90)

– Male genitalia without a cornutus. Fore wing upper surface greyish orange, greyish red, pale red, or reddish grey. ***M. bimaculata pluritelifora*** (Berio) (part) (p. 90)

69 (63) Fore wing upper surface with brown postmedial streaks on veins M_1 to Cu_{1a}, as in Pl. 7, fig. 195 . . . . . ***M. uncta*** (Swinhoe) (p. 70)

– Fore wing upper surface without brown postmedial streaks on veins M_1 to Cu_{1a}. 70

70 (69) Female genitalia with modified papilla analis (sclerotized and of variable shape, rounded, folded or digitate) (Text-figs 17, 18, 19). Fore wing upper surface brownish orange; anal region irrorate with brown, otherwise immaculate . . . . . ***M. metaphaea*** (Hampson) (p. 82)

– Female genitalia with unmodified papilla analis (membranous and of rounded shape) (Text-figs 15, 16) 71

71 (70) Fore wing upper surface bicolorous, light yellow with a brownish outer margin. ***M. albicilia*** (Hampson) (p. 72)

– Fore wing upper surface concolorous, light yellow or greyish orange. ***M. artaxoides*** (Moore) (part) (p. 81)

DESCRIPTIONS OF THE SPECIES AND SUBSPECIES

Masalia philbyi (Brandt) comb. n.

(Text-figs 27–29; Pl. 1, figs 114–117; Map 1)

Timora philbyi Brandt, 1941 : 853. LECTOTYPE ♂, IRAN (NR, Stockholm), here designated [examined.].

Timora philbyi nuristana Boursin, 1960 : 151. Holotype ♀, AFGHANISTAN (ZSBS, Munich) [examined]. **Syn. n.**

Timora philbyi arabica Boursin, 1960 : 152. Holotype ♂, Saudi Arabia (ZSBS, Munich) [examined]. **Syn. n.**

Antenna with flagellar segments sexually dimorphic (Text-figs 27, 28). Proboscis quotient 4 to 5. Fore wing with areole; length, ♂ (21), 13·9–17·6 (lectotype 16·6), ♀ (18), 14·4–18·3. Wing-pattern as in Pl. 1, figs 114–117. Fore wing upper surface with ground colour light yellow to brownish orange; longitudinal streaks white, either faint or distinctly outlined with brownish orange or light brown. Hind wing upper surface white, immaculate or irrorate with brownish orange.

Genitalia. ♂ scobinate bar and cornutus as in *M. fissifascia* (Text-fig. 31). ♀ papilla analis finely spiculate, but simple (Text-fig. 29).

Material examined.

Timora philbyi, LECTOTYPE, here designated, Iran: Laristan, Strasse Bender-Abbas-Sardabad Sardze, about 200 m, ♂, xi(mid).1937 (*Brandt*), in NR, Stockholm; paralectotype, Iran: Baloutchistan, Strasse Tchahbahar–Iranchar, Tahte-Malek, 750 m, ♂, iv(early).1938 (*Brandt*), in NR, Stockholm. *Timora philbyi nuristana*, holotype, Afghanistan: Asmar, Kunartal, 900 m, ♀, 3.iv.1953, in ZSBS, Munich. *Timora philbyi arabica*, holotype, Saudi Arabia: El Riad, ♂, 6.iii.1958 (*E. Diehl*), in ZSBS, Munich; paratype, Saudi Arabia: El Riad, ♀, 11.iii.1958 (*E. Diehl*), in ZSBS, Munich.

Saudi Arabia: Buraiman, 1 ♀ (*Wiltshire*); Dawadami, 1 ♂, 2 ♀, 8.iii.1935; Jidda, 1 ♀, 13.ii.1929; 2 ♀, 28–31.i.1930; 1 ♂, 1 ♀, 26.xii.1934; Khafs, 1 ♀, 26.ii.1935; Marrat, 3 ♂, 6.iii.1935; Mecca, 1 ♂, 7.xii.1934; 1 ♀, 15.ii.1934; Shaib Sudair, 1 ♂, 6.ii.1935; Sir, Khufuiflya, 2 ♂, 7.iii.1935; Usba, 3 ♂, 1 ♀, 5.iii.1935 (all coll. *H. St. J. B. Philby*); E. Ryadh, 1 ♂, 13.iii.1958 (*E. Diehl*), in ZSBS, Munich; Afghanistan: Sarobi, 1100 m, 9 ♂, 2 ♀, 15.iv.–10.iv.1961 (*G. Ebert*), in ZSBS, Munich.

Figs 27–28. *M. philbyi*, antennal segments, lateral view. 27, ♂. 28, ♀.

DISTRIBUTION (Map 1). Arabia, southern Iran and east Afghanistan.

REMARKS. The species is readily distinguished from *M. fissifascia*, the only other species in the group, by the difference in fore wing colour, light yellow to brownish orange in *M. philbyi*, greyish red in *M. fissifascia*.

The type-specimens of *philbyi*, *nuristana* and *arabica*, differing slightly from one another in pattern and colour, lie within a range of continuous variation likely to be found in any one locality.

Masalia fissifascia (Hampson) **comb. n.**

(Text-figs 30, 31; Pl. 1, figs 118, 119; Map 1)

Timora fissifascia Hampson, 1903 : 110.

Antenna with flagellar segments sexually dimorphic, as in *philbyi* (Text-figs 27, 28). Proboscis atypically long, quotient 4 to 5. Fore wing with areole present.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 31; ♀ papilla analis finely spiculate, but simple (Text-fig. 30).

M. fissifascia can be separated from *M. philbyi*, the only other species within the group and the only one with which it is likely to be confused, on the difference in fore wing ground colour. In *M. fissifascia* the ground colour is greyish red, in

FIG. 29. *M. philbyi*, ♀, papilla analis.

M. philbyi light yellow to brownish orange. *M. fissifascia* is also smaller in size, though overall ranges of the species overlap. Two subspecies are recognized, *M. f. fissifascia* from Ethiopia, Somali Republic and Kenya, and *M. f. roseata* from Sudan. Subspecies *fissifascia* can be separated from *roseata* on the light brown outlining of the forked, lower central longitudinal streak, absent in *roseata*.

Map 1. Distribution of species and subspecies of the *fissifascia*-group.

Masalia fissifascia fissifascia (Hampson)

(Pl. 1, fig. 118; Map 1)

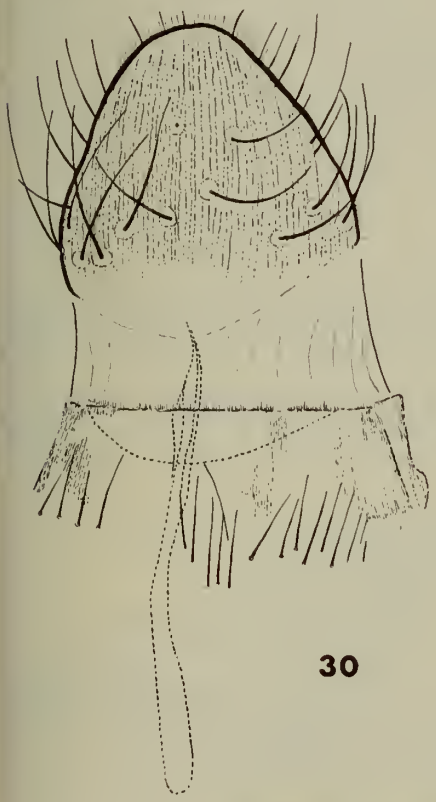
Timora fissifascia Hampson, 1903 : 110. Holotype ♂, KENYA (BMNH) [examined].

Fore wing length ♂ (5), 12·4–13·3 (holotype 13·3), ♀ (6), 16·6–15·1. Wing pattern as in Pl. 1, fig. 118. Fore wing upper surface with ground colour greyish red; radial streaks, lower central longitudinal streak and anal longitudinal streak white, outlined with light brown. The white in the anal longitudinal streak is occasionally missing but more often represented by a short proximal line. Hind wing upper surface white, immaculate or irrorated with light brown.

MATERIAL EXAMINED.

Holotype, [KENYA] B.E. Africa: [Kibaoni] Kibauni, ♂ 4.xii.1898 (*R. Crawshay*).

ETHIOPIA: Dire Daoua, 1 ♂, ix.1935 (*H. Uhlenhuth*); SOMALI REPUBLIC: Buran, 10°13′N, 48°47′E, 3000 ft, 1 ♀, ix–x.1929 (*C. L. Collenette*); Hargeisa, 4300 ft, 1 ♂, 1 ♀, v.1929 (*M. Portal-Hyatt*); KENYA: Kedai: 1 ♀, xii.1911 (*Feather*); Kibwezi, 1 ♀, xii.1921 (*Feather*); Nairobi, 1 ♂, iv.1927 (*D. H. Hopkins*); South Kavirondo, Suna, 2 ♂, 1 ♀, iii–iv.1932 (*W. Feather*).



30

31

FIGS 30–31. *M. fissifascia*, genitalia. 30, ♀. 31, ♂.

Distribution (Map 1). Ethiopia, Somali Republic and Kenya.

Remarks: The light brown outlining of the forked lower central longitudinal streak separates subspecies *fissifascia* from *roseata*.

Masalia fissifascia roseata (Pinhey) comb. et stat. n.

(Pl. 1, fig. 119; Map 1)

Timora roseata Pinhey, 1956 : 13. Holotype ♂, Sudan (BMNH) [examined].

Forewing length ♂ (2), 13·2–14·0 (holotype), ♀ (2), 12·3–13·2. Wing pattern as in Pl. 1, fig. 119. Fore wing upper surface with ground colour pale to greyish red, longitudinal streaks white. Hind wing upper surface white.

Material examined.

Holotype, Sudan: Showak, ♂, ix.1949 (*E. Wilson*). Paratype, Sudan: Showak, ♀, ix.1949 (*E. Wilson*).

Sudan: Ed Damer, Hudeiba, 1 ♂, 8.viii.1962 (*R. Remane*), in ZSBS, Munich; Blue Nile Province, Wad Medani, 1 ♂, 2.viii.1962 (*R. Remane*), in ZSBS, Munich.

Distribution (Map 1). North-east Sudan.

Remarks. The absence from *M. f. roseata* of brown outlining to the longitudinal streaks distinguishes it from the nominate subspecies.

Masalia decorata (Moore) comb. n.

(Text-figs 32–36; Pl. 1, figs 120–125; Map 2)

Pradatta decorata Moore, 1881 : 365.

M. decorata is closely allied to *M. leucosticta*. The absence from *M. decorata* of pink in the proximal to mid costal region of the fore wing distinguishes it from *M. leucosticta*.

Three subspecies are recognized, *M. d. decorata* from Afghanistan, India and Ceylon, *M. d. metarhoda* from Africa and *M. d. albiseriata* from Africa and Saudi Arabia. The subspecies are separable on the following genitalic differences in the male.

	cornutus of aedeagus	scobinate bar of aedeagus
M. d. decorata	present	present
M. d. albiseriata	absent	present
M. d. metarhoda	present	absent, or if present poorly differentiated

In addition the two African subspecies can be separated on differences in fore wing pattern and hind wing colour. The fore wing postmedial white dots or dashes in *M. d. albiseriata* lie along the proximal margin of the postmedial band (Text-fig. 33) whilst in *M. d. metarhoda* they lie more-or-less centrally within it (Text-fig. 32). In *M. d. albiseriata* the hind wing upper surface is white to light yellow, in *M. d.*

metarhoda greyish red, or greyish to brownish orange. Position of the postmedial white dots in *M. d. decorata* is variable, ranging from the condition found in *M. d. albiseriata* to that in *M. d. metarhoda*.

The possibility that *M. d. albiseriata* and *M. d. metarhoda* are biologically isolated is raised by the distribution of *M. d. albiseriata* and *M. d. metarhoda* in the Senegal–Gambia region, particularly the record of *M. d. albiseriata* and *M. d. metarhoda* from Dakar, caught on the same day, for no intermediate material was included. Their occurrence together cannot be satisfactorily explained, and more material and breeding experiments are needed to resolve the problem. However if *M. d. albiseriata* and *M. d. metarhoda* are biologically isolated they may well be linked as subspecies through *M. d. decorata*. The closer affinities of *M. d. albiseriata* and *M. d. metarhoda* to *M. d. decorata*, than to each other and their geographical isolation from *M. d. decorata* suggests an instance of a 'ring of races'.

Masalia decorata decorata (Moore)

(Text-fig. 34; Pl. 1, figs 120–122; Map 2)

Pradatta decorata Moore, 1881 : 365. Lectotype ♂, INDIA (BMNH) [examined].
Timora decorata (Moore) Hampson, 1903 : 106. [Lectotype designated.]

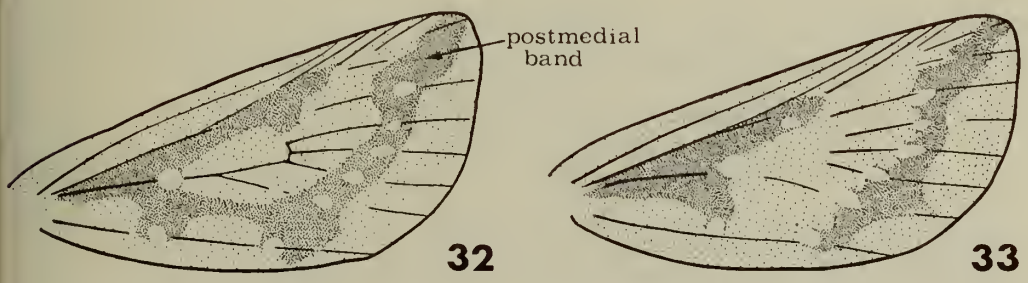
Fore wing with areole; length ♂ (57), 9·0–13·6 (lectotype 10·1), ♀ (22), 10·0–12·8. Wing pattern as in Pl. 1, figs 120–122. Fore wing upper surface with ground colour light yellow; transverse and longitudinal markings pastel-red to pink, antemedial dots, when present, and postmedial dots white. Hind wing upper surface white to pale yellow.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 34. ♀ papilla analis simple.

MATERIAL EXAMINED.

Lectotype, designated by Hampson, [INDIA: Uttar Pradesh,] Saidabad, ♂; paralectotypes, [Uttar Pradesh], Saidabad, 1 ♂ (*Atkinson*); [U.P.], Allahabad, 1 ♂ (*Hellard*); [U.P.] N.W. Provinces, [Mainpuri] Manpuri, 2 ♂, 1 ♀; Deccan, 1 ♀ (*Day*); [?]; Sind Valley, 1 ♂ (*Atkinson*), in MHNU, Berlin.

AFGHANISTAN: Bashgultal, 1300 m, 1 ♀, 15.vii.1952 (*J. Klapperich*); Sarobi, 1100 m, 1 ♀, 28.vi.1956 (*H. G. Amsel*), both in ZSBS, Munich. INDIA: Gujarat,



FIGS 32–33. 32, *M. decorata metarhoda*, fore wing. 33, *M. albiseriata* fore wing.

Deesa, 1 ♂, 1 ♀, viii.1890; 2 ♂, 1 ♀, x.1899; Himachal Pradesh, Dharmsala, 1 ♂; Jammu & Kashmir, Srinagar, 5200 ft, 1 ♀, vii.1892; 1 ♀, 3.viii.1892; 2 ♂, 6.viii.1892; 1 ♂, 10.viii.1892; 5 ♂, 1 ♀, 11.viii. 1892; 3 ♂, 1♀, 12.viii.1892; 1 ♂, 1 ♀, 14.viii.1892; 2 ♂, 1 ♀, x.1899; Maharashtra, Nagpur, 5 ♂; Mysore, Belgaum, 1 ♀ (*T. R. Bell*); Uttar Pradesh, Meerut, 1 ♀, 20.vii.1906 (*C. H. Ward*); West Bengal, Darjeeling, 1 ♂, (*Lidderdale*); W.B., Calcutta, 1 ♂, 1 ♀; ?, Umballa, 1 ♂, 21.ix.1903, (*C. H. Ward*). Sikkim: 1 ♀. Ceylon: Kaits, 1 ♂, iii.1901; Puttalam, 7 ♂, 3 ♀; 6 ♂, 1 ♀. Burma: 1 ♂.

Distribution (Map 2). Afghanistan, India, Ceylon and Burma.

Remarks. *M. d. decorata* can be separated from *M. d. albiseriata* and *M. d. metarhoda* on difference in male genitalia. In the nominate subspecies the cornutus and scobinate bar are both present, in *M. d. albiseriata* and *M. d. metarhoda* one or other of these structures is absent; in *albiseriata* the cornutus, in *metarhoda* the scobinate bar.

Map 2. Distribution of subspecies of *M. decorata*.

Masalia decorata albiseriata (Druce) comb. et stat. n.

(Text-figs 33, 35; Pl. 1, fig. 123; Map 2)

Timora albiseriata Druce, 1903 : 200. LECTOTYPE ♂, GAMBIA (BMNH), here designated [examined].
Timora buchanani Rothschild, 1921 : 160. Holotype ♂, NIGER (BMNH) [examined]. **Syn. n.**

Fore wing with areole; length ♂ (9), 8·9–10·7 (lectotype 8·9), ♀ (10), 9·2–11·2. Wing pattern as in Pl. 1, fig. 123. Fore wing upper surface with ground colour light yellow; transverse and longitudinal markings pastel-red to pink; antemedial dots when present, and postmedial dots, white. Hind wing upper surface white to light yellow.

Genitalia. ♂ atypical in that the cornutus is absent; scobinate bar and proximal part of vesica as in Text-fig. 35; ♀ with papilla analis simple, as in *M. d. decorata*.

MATERIAL EXAMINED.

Timora albiseriata, LECTOTYPE, here designated, GAMBIA, ♂ (*A. Moloney*). Paralectotype, GAMBIA, ♀ (*A. Moloney*). *Timora buchanani*, holotype [NIGER:] Azzal, North of Agades, ♂, 14.vii.1920 (*A. Buchanan*). Paratypes. [NIGER:] Azzal, 1 ♀, 13.vii.1920; 1 ♂, 14.vii.1920; 2 ♂, 1 ♀, 15.vii.1920.

SENEGAL: Dakar, 1 ♂, 12.ix.1956 (*C. Rungs*), in MNHN, Paris; Kaolack, 2 ♀ (*LeMoult*). KENYA: Wajir, 1 ♀, iv.1958 (*Hutchinson*). [?]: Saloum, 1 ♂, v.1926. SAUDI ARABIA: Jidda, 1 ♀, 3.ii.1930; 1 ♀, 8.iv.1930; 1 ♂, 1 ♀, 26.v.1930 (all *H. St J. B. Philby*); Mujaririma, 1 ♂, 1 ♀, i.1945 (*B. P. Uvarov*).

DISTRIBUTION (Map 2). Senegal, Gambia, Ghana, Niger, Sudan and Saudi Arabia.

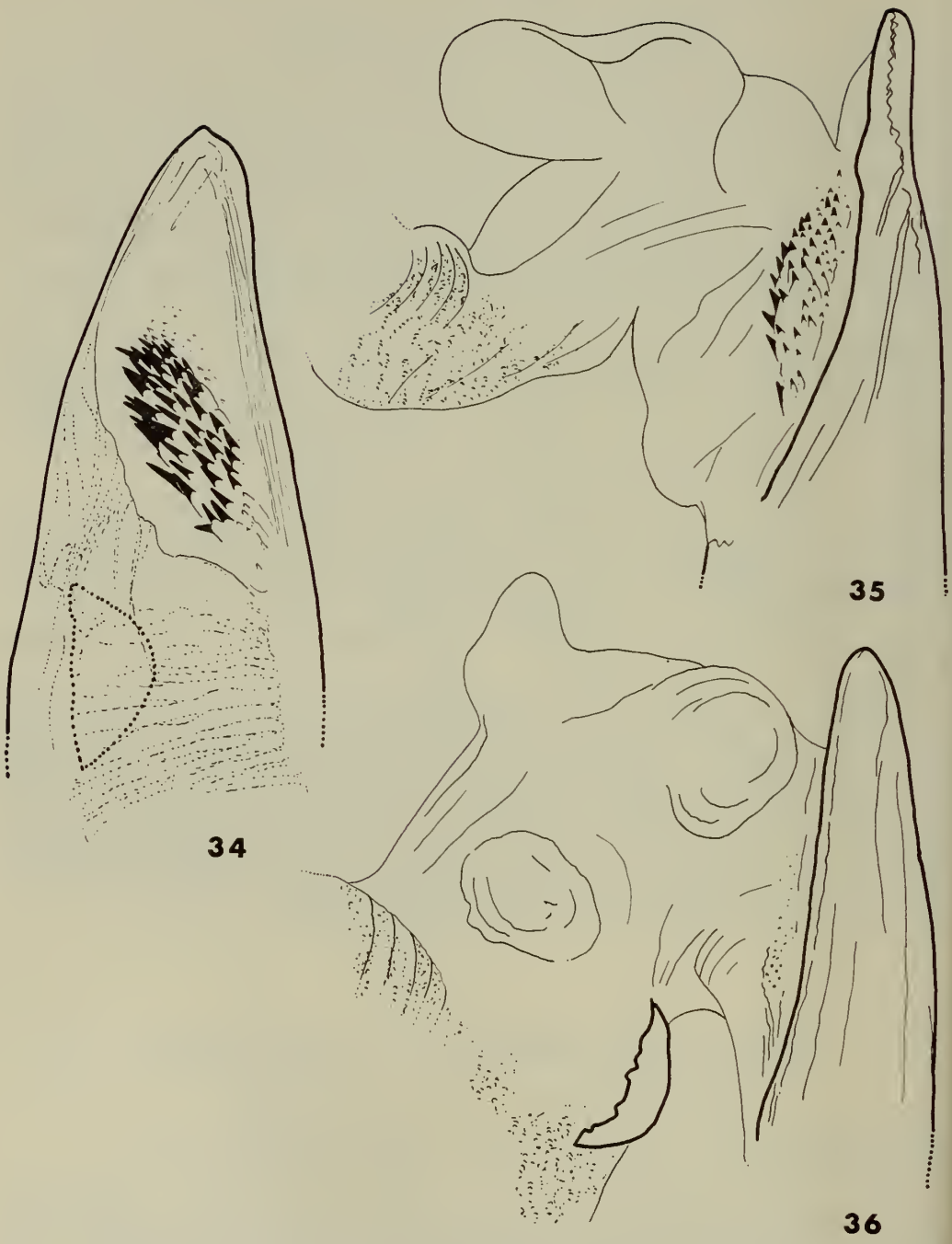
REMARKS. The absence of a cornutus in the male of *M. d. albiseriata* readily separates it from *M. d. metarhoda* and *M. d. decorata*; in each of the latter two a cornutus is present and well developed. *M. d. albiseriata* can also be distinguished from *M. d. metarhoda* on difference in fore wing pattern and hind wing colour, the postmedial white dots of the fore wing in *M. d. albiseriata* lie along the proximal margin of the postmedial band, in *M. d. metarhoda* they lie more-or-less centrally within it. The hind wing colour of *M. d. albiseriata* is white to light yellow, that of *M. d. metarhoda* greyish red, or greyish to brownish orange.

Masalia decorata metarhoda (Druce) comb. et stat. n.

(Text-figs 32, 36; Pl. 1, figs 124, 125; Map 2)

Timora metarhoda Druce, 1903 : 201. Lectotype ♀, GAMBIA (BMNH) [examined].
Timora metarhoda Druce; Hampson, 1903 : 106. [Lectotype designated.]

Fore wing with areole; length ♂ (20), 9·2–11·2, ♀ (27), 9·8–12·2 (lectotype). Wing pattern as in Pl. 1, figs 124, 125. Fore wing with upper surface ground colour light to greyish yellow; transverse and longitudinal markings pastel-red to pink; antemedial dots, when present, and postmedial dots, white. Hind wing with upper surface greyish red or greyish to brownish orange.



FIGS 34–36. *M. decorata* subspecies, ♂, scobinate bar and cornutus. 34, *M. d. decorata*. 35, *M. d. albiseriata*. 36, *M. d. metarhoda*.

Genitalia. ♂ with scobinate bar absent or poorly differentiated. Distal end of aedeagus and proximal part of vesica as in Text-fig. 36. ♀ with papilla analis simple, as in *M. d. decorata*.

MATERIAL EXAMINED

Lectotype, designated by Hampson, GAMBIA, ♀ (*A. Moloney*).

SENEGAL: Dakar, 3 ♂, 1 ♀, 12.ix.1956 (*C. Rungs*), in MNHN, Paris; Kaolack, 1 ♂ (*LeMoult*); 3 ♀ (*G. Melou*); N'dande, 1 ♂, 26.viii.1951 (*B. Boniface*), in MNHN, Paris. GHANA: Northern Territories, Navaro, 1 ♀; 1 ♂, x.1923 (both *A. W. Cardinall*). ? NIGER: Baban Tubki, south of Zinder, 1 ♀, 13.ix.1920 (*A. Buchanan*). NIGER: Damergou, Bande, 4 ♂, 7 ♀, 16.ix.1920; Kaleloua, 2 ♂, 3 ♀, 8.ix.1920; Makochia, 6 ♂, 8 ♀, 15.ix.1920; Tanout, 1 ♂, 6.ix.1920; Zinder, 1 ♀, 11.ix.1920 (all *A. Buchanan*). SUDAN: Khartoum, 1 ♂, 5.ix.1928 (*H. W. Bedford*); White Nile, 12–15 N., 1 ♀ (*Yardley*).

DISTRIBUTION (Map 2). Senegal, Gambia, Ghana, Niger and Sudan.

REMARKS. The absence of, or a poorly differentiated, scobinate bar in the male of *M. d. metarhoda* distinguishes it from both *M. d. albiseriata* and the nominate subspecies. In these latter two the scobinate bar is well developed. *M. d. metarhoda* can also be distinguished from *M. d. albiseriata* on difference in fore wing pattern and hind wing colour; the postmedial white dots of the fore wing in *M. d. metarhoda* lie more-or-less centrally within the postmedial band (Text-fig. 32), in *M. d. albiseriata* they lie along the bands proximal margin (Text-fig. 33). Hind wing colour of *M. d. metarhoda* is greyish red, or greyish to brownish orange, that of *M. d. albiseriata*, white to light yellow.

Masalia leucosticta (Hampson) **comb. n.**

(Text-figs 37, 38; Pl. 2, figs 126–130; Map 3)

Timora leucosticta Hampson, 1902 : 256.

M. leucosticta can be distinguished from the closely allied *M. decorata* by the difference in colour of the proximal area of the costal region, pink in *M. leucosticta*, pale to olive yellow in *M. decorata*; and from *M. funebris*, to which *M. leucosticta joiceyi* shows particularly close affinities, on difference in hind wing colour.

Three subspecies are recognized: *leucosticta*, *vinula* and *joiceyi*. The three are separable on fore wing differences and distribution. *M. l. vinula* and *M. l. joiceyi* have contiguous ante- and postmedial markings distinguishing them from *M. l. leucosticta* in which the markings are not contiguous. The distribution of *M. l. vinula* is northern Tanzania and northward to Ethiopia; that of *M. l. joiceyi*, southern Tanzania and westward to the southern Congo (Kinshasa). The areole, usually present in *M. l. vinula*, is rarely present in *M. l. joiceyi*.

Masalia leucosticta leucosticta (Hampson)

(Text-fig. 38; Pl. 2, figs 126–128; Map 3)

Timora leucosticta Hampson, 1902 : 256. Lectotype ♂, Botswana (BMNH) [examined].
Timora leucosticta Hampson; Hampson, 1903 : 107. [Lectotype designated].
Timora continuata Grunberg, 1910 : 126. LECTOTYPE ♂, South West Africa (MNHU, Berlin), here designated [examined]. **Syn. n.** [Gaede 1935 : 105 refers to *continuata* as a form, both of *metarhoda* and *leucosticta*].

Fore wing with areole usually present; length ♂ (66), 10·9–13·4 (lectotype 12·5), ♀ (51), 11·9–14·0. Wing pattern as in Pl. 2, figs 126–128. Fore wing upper surface with ground colour light yellow, transverse and longitudinal markings pink to greyish pink, postmedial dots and when present, antemedial dots white. Hind wing with upper surface white to pale yellow, immaculate or with subterminal or whole area behind subterminal region irrorate with greyish brown.

Genitalia. ♂ scobinate bar and cornutus (Text-fig. 38). ♀ with papilla analis simple.

Material examined.

Timora leucosticta, lectotype, designated by Hampson, [Botswana] N'Gami Country, ♂ (*F. D. Lugard*). *Timora continuata*, LECTOTYPE, here designated,

Figs 37–38. *M. leucosticta* subspecies, ♂, scobinate bar and cornutus. 37, *M. l. joiceyi*. 38, *M. l. leucosticta*.

South West Africa: Okahandja, [Windhoek] 'Windhuk', ♂, 24.ii.1909 (*S. G. Seewald*), MNHU, Berlin. South West Africa: Hoffnung (east of Windhoek), 1850 m, 5 ♂, 9.i.1934; 40 ♂, 38 ♀, 10.i.1934; 1 ♂, 30.i.1934 (all *K. Jordan*); Okahandja, 2 ♂, 20–26.i.1928; 1 ♂, 27.i.–2.ii.1928; 1 ♂, 1 ♀, 3–16.ii.1928; 2 ♂, 2–18.iii.1928; 2 ♂, 1 ♀, 19–29.iii.1928 (all *R. E. Turner*); 1 ♂, ii.1935 (*F. Gaerdes*); 1 ♂, 27.ii.1945; 1 ♂, 24.iii.1947; 1 ♂, 24.v.1947; 2 ♀, 25.iii.1954; 1 ♀, 5.iv.1953 (all *F. Gaerdes*), in ZSBS, Munich; Windhoek, 1 ♀ (*Knier*), in ZSBS, Munich; 1650 m, 1 ♂, 2 ♀, 16.i.1934; 2 ♀, 19.i.1934 (all *K. Jordan*); Tanzania: Kongwa, 2 ♂, 23.iv.1917 (*A. Loveridge*); District of Great Craters, 1 ♂, ii–iii.1921 (*T. A. Barns*); Mamboia, 1 ♂ (*Baxter*). The following specimens are intermediate between *M. l. leucosticta* and *M. l. vinula*, but placed with *M. l. leucosticta*: Kondoa Irangi (dry sandy country), 1 ♀, iii.1921 (*T. A. Barns*); Shinyanga, 1 ♀, i.1957 (*Croft*); Mwanza, 1 ♀, xii.1925–i.1926; Arusha District, Odeani Crater (dry thorn bush country), 1 ♀ (*T. A. Barns*).

Distribution (Map 3). South West Africa, Botswana and Tanzania.

Map 3. Distribution of subspecies of *M. leucosticta*.

Remarks. The non-contiguous ante- and postmedial pink markings on the fore wing of *M. l. leucosticta* separate it from *M. l. vinula* and *M. l. joiceyi*; in these latter two subspecies the markings are contiguous.

Masalia leucosticta vinula (Berio) comb. et stat. n.

(Pl. 2, fig. 129; Map 3)

Timora vinula Berio, 1943 : 182. Holotype ♂, Ethiopia: Elaberet, 17.ix.1938 (*G. Vaccaro*) (Berio Coll., MCSN, Genoa).

Fore wing with areole usually present; length ♂ (42), 10·4–13·8, ♀ (13), 10·5–14·2. Wing pattern as in Pl. 2, fig. 129. Fore wing upper surface with ground colour light yellow; postmedial dots, and when present antemedial dots, white; other markings pink to greyish pink. Hind wing with upper surface pale yellow, immaculate, or pale yellow with subterminal or whole area behind subterminal region irrorate with greyish brown.

Genitalia. ♂ with scobinate bar and cornutus as in *M. l. leucosticta* (Text-fig. 38); ♀ papilla analis simple, as in *M. l. leucosticta*.

Material examined.

[Tanzania:] Miriu River, 1 ♂, iii.1925 (*D. Hopkins*); Musoma, Banagi Hill, 2 ♂, 1 ♀, iii.1957. Kenya: Isiolo, 1 ♂, iv.–v.1951; 2 ♂, iv.1954 (*J. Adamson*); Makindu (south of Nairobi), 1 ♀, iii.1927 (*W. Feather*); Masongoleni, 1 ♀, 25.iii.1911; 1 ♂, 30.iv.1911; 1 ♀, 25.ix.1911; 1 ♂, 30.iv.1911 (all *W. Feather*); Mombasa, 2 ♂, vi.1916 (*van Someren*); Kibwezi, 2 ♀, 9.xii.1916; 8 ♂, 12.xii.1916; 1 ♂, 21.xii.1916; 1 ♀, 23.iv.1917; 1 ♂, 11.xii.1918; 6 ♂, 1 ♀, 19.xii.1918; 5 ♂, 22.xii.1918; 2 ♂, 1 ♀, 23.xii.1918; 2 ♀, 13.iv.1919; 1 ♂, 2.v.1919; 1 ♂, 2.v.1919; 1 ♂, 2.v.1919; 1 ♂, 4.v.1919; 1 ♀, xii.1920; 1 ♂, 3 ♀, iv.1922 (all *W. Feather*). The following specimens show variation in pattern between *M. l. leucosticta* and *M. l. vinula* but are placed with *M. l. vinula*. Ethiopia: Harar, 1 ♂, 24.iv.1939 (*R. E. Ellison*); Somali Republic: Hargeisa, 4300 ft, 1 ♂, 1 ♀, v.1929 (*M. Portal-Hyatt*).

Distribution (Map 3). Tanzania, Kenya, Ethiopia and Somali Republic.

Remarks. The contiguous ante- and postmedial pink markings on the fore wing of *M. l. vinula* distinguish it from *M. l. leucosticta*. Differences between *M. l. vinula* and *M. l. joiceyi* are less marked; *joiceyi* tends to be of larger size and more robust in appearance and the areole, in contrast with *vinula*, is rarely present. *M. l. vinula* and *M. l. joiceyi* are separable on distribution, *vinula* occurring in northern Tanzania and northward to Ethiopia, *joiceyi* occurring in southern Tanzania and westward to the southern Congo (Kinshasa).

Type-specimens have not been examined; determination is based on a paratype photograph (Eritrea: Elaberet, ♂, 1.ix.1938) presented by Dr E. Berio and a specimen from the BMNH Collection identified by him.

Masalia leucosticta joiceyi (Prout) **comb. et stat. n.**

(Text-fig. 37; Pl. 2, fig. 130; Map 3)

Timora joiceyi Prout, 1921 : 119. Holotype ♂, Congo (Kinshasa) (BMNH) [examined].

The subspecies is known only from male specimens.

Fore wing without areole; length ♂ (4), 13·6 (holotype)–16·5. Wing pattern as in Pl. 2, fig. 130. Fore wing upper surface with ground colour yellowish white to pale yellow, markings pink to greyish pink; postmedial and antemedial dots white. Hind wing upper surface white, with either subterminal or whole area finely to moderately irrorate with greyish brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 37.

Material examined.

Holotype, Congo (Kinshasa): Lufira River near Likasi Copper Mine, 4000 ft, ♂, 6.xii.1918 (*T. A. Barns*).

Congo (Kinshasa): Elisabethville, 1 ♂, 16.xii.1954 (*C. Seydel*). Tanzania: Songea, 1 ♂, 19.i.1933 (*R. F. Johnstone*); ?; Ningpo, 1 ♂, in ZSBS, Munich.

Distribution (Map 3). Congo (Kinshasa) and Tanzania.

Remarks. *M. l. joiceyi* and *M. funebris* are closely allied; *M. funebris* is much darker in colour with extensive red areas in the fore wing and with its brown hind wings readily distinguished from *M. l. joiceyi*. The contiguous ante- and postmedial pink markings on the fore wing of *M. l. joiceyi* distinguish it from *M. l. leucosticta*. *M. l. joiceyi* and *M. l. vinula* are separable on distribution, *joiceyi* occurring in southern Congo (Kinshasa) and southern Tanzania, *vinula* occurring in northern Tanzania and northward to Ethiopia.

Masalia funebris (Berio) **comb. n.**

(Text-fig. 39; Pl. 2, fig. 131)

Timora funebris Berio, 1962 : 125. Holotype ♂, Congo (Kinshasa) (MRAC, Tervuren) [examined].

The species is known only from male specimens.

Fore wing without areole; length ♂ (1), 14·7 (holotype). Wing pattern as in Pl. 2, fig. 131. Fore wing upper surface with costal and central regions bluish red, finely irrorate with brown; basal streak and outer marginal area pale to light orange; anal region brown, post- and antemedial dashes white. Regions not clearly defined. Hind wing upper surface brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 39.

Material examined.

Holotype, [Congo (Kinshasa):] [Elizabethville] Elisabethville, ♂, x.1933 (*C. Seydel*), in MRAC, Tervuren.

Distribution. Southern Congo (Kinshasa).

Remarks. *M. funebris* is most closely allied to *M. sublimis* and *M. leucosticta* particularly to *M. l. joiceyi*; the brown fore wing markings and brown hind wings of *funebris*, however, readily distinguish it from them.

Masalia prochaskai (Viette) comb. n.

(Text-fig. 40; Pl. 2, fig. 132)

Timora prochaskai Viette, 1957 : 271. Holotype ♂, Madagascar: Betioky-Sud, i.1955 (*Prochaska*) (MNHN, Paris).

The species is known only from male specimens.

Fore wing with areole; length ♂ (1), 8·9. Wing pattern as in Pl. 2, fig. 132. Fore wing upper surface with ground colour light yellow; costal region, orbicular and discocellular spots. and post- and antemedial lines, greyish to dull red; post- and antemedial dots white, poorly differentiated. Hind wing upper surface pale yellow, suffused with dull red.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 40.

Material examined.

Madagascar: Betioky-Sud, ♂, i.1955 (*Prochaska*), in MNHN, Paris.

Distribution: Madagascar.

Remarks. Allied to *M. decorata* and *M. leucosticta*. The absence of pink from the proximal area of the costal region in *M. decorata* distinguishes it from *M. prochaskai*. Differences between *leucosticta* and *prochaskai* are less marked; in *leucosticta* the pink longitudinal costal band is comparatively narrow, passing through only a part of the costal region, and often broken postmedially. In

Fig. 39. *M. funebris*, ♂, scobinate bar and cornutus.

prochaskai the band is complete and much wider, occupying nearly the whole costal region.

The single specimen of *prochaskai* examined was determined by Dr P. Viette.

Masalia sublimis (Berio) comb. n.

(Text-fig. 41; Pl. 2, figs 133, 134)

Timora sublimis Berio, 1962 : 126. Holotype ♂, Congo (Kinshasa) (MRAC, Tervuren) [examined].

Fore wing without areole; length, ♂ (8), 13·8–16·2 (holotype 14·6), ♀ (1), 15·3. Wing pattern as in Pl. 2, figs 133, 134. Fore wing upper surface with ground colour pastel-yellow; markings dull red to greyish pink. Hind wing upper surface white.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 41. ♀ papilla analis simple.

Material examined.

Holotype, Congo (Kinshasa): Kalule Nord, ♂, i.1934 (*Seydel*), in MRAC, Tervuren.

?Angola: 1 ♂, 31.xii.1912 (*Rohan-Chabot*), in MNHN, Paris; Angola: 1 ♂, i.1913 (*Rohan-Chabot*); Congo (Kinshasa); Elizabethville, 1 ♂, 31.xii.1932 (*C. Seydel*); Sandoa, Luiva, 1 ♂, 10.iv.1932 (*F. G. Overlaet*), both from Mus. Tervuren; Sandoa, 1 ♀, ii.1924, Zool. Staatssamml., München; Zambia: Mumbwe, 1 ♂, 6.i.1957 (*R. C. Dening*); Mwengwa, 1 ♂, 18.i.1914 (*Dollman*); Rhodesia: Gwaai River, 1 ♂, 17.ii.1921 (*C. E. Godman*).

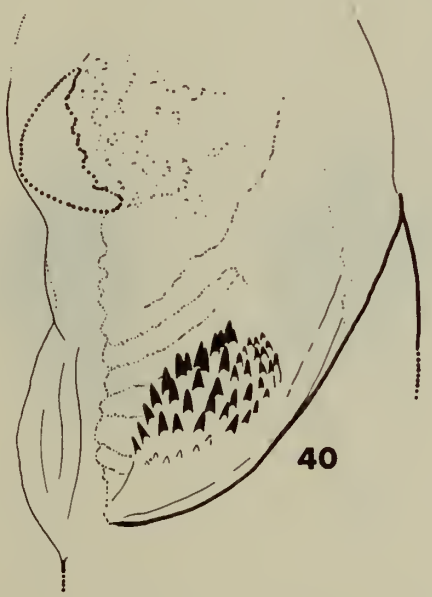


Fig. 40. *M. prochaskai*, ♂, scobinate bar and cornutus.

Distribution. Angola, Congo (Kinshasa), Zambia and Rhodesia.

Remarks. *M. sublimis* is closely allied to *M. leucosticta*, *M. decorata* and *M. funebris*; the incomplete postmedial band and absence of postmedial white dots from the fore wing distinguish it from them. *M. sublimis* is not likely to be confused with any other species.

Masalia disticta (Hampson) **comb. n.**

(Text-figs 25, 42; Pl. 2, figs 135–137; Map 4)

Timora disticta Hampson, 1902 : 441.

M. disticta is separable from other species within the group and genus in possessing a white orbicular and white discocellular dot (Text-fig. 25).

Three subspecies are recognized; the nominate subspecies from South Africa, *flavirosea* from Central Africa and *albirosea* from East Africa (Map 4). The subspecies differ from one another in extent of fore wing pink and yellow colouring. In *albirosea*, known only from the worn type, the costal region is pink, the central and anal regions yellowish white. In subspecies *disticta*, the costal and anal regions are pink, the central region pale yellow. In *flavirosea* all three regions are pink, a pale yellow basal dash extending basi-posteriorly to the anal region.

Fig. 41. *M. sublimis*, ♂, scobinate bar and cornutus.

Masalia disticta disticta (Hampson)

(Text-fig. 42; Pl. 2, fig. 136; Map 4)

Timora disticta Hampson, 1902 : 441. Holotype ♂, Lesotho (BMNH) [examined].

Fore wing with areole present, well developed; length ♂ (2), 15·3–16·2 (holotype), ♀ (2), 16·5. Wing pattern as in Pl. 2, fig. 136. Fore wing upper surface with costal and anal regions pink, central region pale yellow, orbicular and discocellular dots white. Hind wing upper surface white.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 42. ♀ papilla analis simple.

Material examined.

Holotype, [Lesotho] Basutoland: Masite, ♂, 31.i.1902 (*S. Weigall*).

South West Africa: Okahandja, 1 ♀, 17.i.1958, in ZSBS, Munich; Windhoek, 1650 m, 1 ♀, 20.i.1934; South Africa: Pretoria, 1 ♂, 19.i.1906.

Distribution (Map 4). South Africa.

Remarks. The pale yellow central and pink anal region in the fore wing of *M. d. disticta* distinguishes it from *M. d. flavirosea* (central region pink) and *M. d. albirosea* (anal region white).

Fig. 42. *M. disticta disticta*, ♂, scobinate bar and cornutus.

Masalia disticta albirosea (de Joannis) **comb. et stat. n.**

(Pl. 2, fig. 135; Map 4)

Timora albirosea de Joannis, 1913 : 124. LECTOTYPE ♂, Ethiopia (MNHN, Paris), here designated [examined].

Fore wing with areole; length ♂ (1), 14·7 (lectotype). Wing pattern as in Pl. 2, fig. 135. Fore wing upper surface with costal region pink, central and anal regions yellowish white, orbicular and discocellular dots white. Hind wing upper surface white.

Genitalia. ♂ not examined but scobinate bar and cornutus almost certainly as in *M. d. disticta* (Text-fig. 42).

Material examined.

LECTOTYPE, here designated, [Ethiopia:] Eritrea, ♂, in MNHN, Paris.

Distribution (Map 4). East Africa.

Map 4. Distribution of subspecies of *M. disticta*.

Remarks. The yellowish white central and anal regions in the fore wing of *M. d. albirosea* separate it from the nominate subspecies (anal region pink) and from *M. d. flavirosea* (central and anal regions pink).

As a species, *M. albirosea* was described from two specimens of which only one, labelled type, survives. Although in this specimen the pink fore wing markings are considerably rubbed, there is no trace of pink from the central or anal regions.

Masalia disticta flavirosea (Hampson) comb. et stat. n.

(Pl. 2, fig. 137; Map 4)

Timora flavirosea Hampson, 1903 : 111. Holotype ♂, Kenya (BMNH) [examined].

Fore wing with areole present, well developed; length ♂ (18), 13·6–18·5 (holotype 16·7), ♀ (3), 16·4–17·3. Wing pattern as in Pl. 2, fig. 137. Fore wing upper surface with ground colour pink, basal dash pale yellow, orbicular and discocellular dots white. Hind wing upper surface white.

Genitalia. ♂ scobinate bar and cornutus as in *M. d. disticta* (Text-fig. 42). ♀ papilla analis simple.

Material examined.

Holotype, [Kenya:] Machakos, ♂, 9.xii.1898 (*R. Crawshay*).

Angola: Cubal River, 1 ♂, iii.1899; Lepi, 3500 ft, 1 ♂ (*E. Robins*); Luimbale, 1800–1900 m, 7 ♂, 1 ♀, 15–20.iii.1934 (*K. Jordan*); Tanzania: Arusha District, 1 ♀; Arusha District, Ngorongoro Crater, 5800–5900 ft, 3 ♂, 1 ♀, ii–iii.1921 (*M. S. Moore*); Musoma, 1 ♂; Njombe, 6000–6500 ft, 1 ♂, 25.ii.1952; Kenya: Athi River, 1 ♂, 13.v.1899 (*C. S. Betton*); Kikuyu District, 1 ♂; Kilindini, 1 ♂, 27.iv.1899.

Distribution (Map 4). Central Africa.

Remarks. *M. d. flavirosea* can be separated from *M. d. disticta* and *M. d. albirosea* on the colour difference of the central region of the fore wing: pink in *flavirosea*, yellowish white to pale yellow in *disticta* and *albirosea*.

THE *GALATHEAE–CRUENTATA* COMPLEX

This complex is made up of several variant lines tentatively arranged into two species, *M. galatheae* and *M. cruentata*.

Within the *galatheae*-group, *M. galatheae* and *M. cruentata* are closely allied to *M. disticta* and *M. flaviceps*. *M. galatheae* (excepting *M. g. bechuana*) and *M. cruentata* are separable from *M. disticta* on differences in the female papilla analis, which is modified in *M. galatheae* and *M. cruentata*, simple in *M. disticta*. Separation of *M. g. bechuana* and *M. disticta* can be made on the absence and presence, respectively, of a white fore wing orbicular and discocellular dot. With its white fore wings *M. flaviceps* is readily distinguished from *M. galatheae* and *M. cruentata*.

Differences between *M. galatheae* and *M. cruentata* are slight. In the fore wing pattern of *M. cruentata* the pink-red costal longitudinal marking is usually narrow and the boundaries of this and the pink-red, anal longitudinal marking toward the central region, are diffuse. In *M. galatheae* the pink-red, costal longitudinal marking

is wide, occupying most or all of the costal region and the boundaries of this and the pink-red, anal longitudinal marking, toward the central region, are sharply defined. In the female genitalia the papilla analis of *M. cruentata* is more pointed and it lacks the terminal spines found in *M. g. galatheae* (Text-figs 46–49, 52); in the male the scobinate bar of *M. cruentata* has fewer spicules (*cruentata* 10–40, *galatheae* 40–150).

Masalia galatheae (Wallengren) **comb. n.**

(Text-figs 43–51; Pl. 3, figs 138–149; Map 5)

Leocyma galatheae Wallengren, 1856 : 58.

The species is distributed across Africa and central and southern India.

Two subspecies are recognized, *galatheae* and *bechuana*, the latter being restricted to a region of southern Africa and structurally separated from the nominate subspecies on the difference in the female papilla analis, simple in *bechuana*, modified in *galatheae*. In the nominate subspecies, variation occurs in size, fore wing shape, presence or absence of an areole and in fore wing colour and pattern. Variation with respect to these four variables shows a fairly high degree of linkage, though a small number of apparently random intermediates do occur. On the basis of linked variation a number of forms are recognized; four, each formerly described as species, are referred to by their originally proposed names: *galatheae, imitata, nigrolineata* and *splendens*.

Masalia galatheae galatheae (Wallengren)

(Text-figs 43–49; Pl. 3, figs 138–144; Map 5)

Leocyma galatheae Wallengren, 1856 : 58. Holotype ♂, South Africa (NR, Stockholm) [examined].

Alaria lanceolata Walker, 1865 : 767. Holotype ♂, India (BMNH) [examined]. [Synonymized by Aurivillius, 1925 : 12.]

Adisura splendens Druce, 1887 : 685. LECTOTYPE ♂, Gambia (BMNH), here designated [examined]. [Synonymized with *lanceolata* by Hampson, 1903 : 111.]

Adisura imitata Druce, 1889 : 301. LECTOTYPE ♂, 'Costa Rica' [see below] (BMNH), here designated [examined]. [Synonymized with *lanceolata* by Hampson, 1903 : 111.]

Curubasa depicta Swinhoe, 1891 : 146. Holotype ♀, India (BMNH) [examined]. [Synonymized with *lanceolata* by Hampson, 1903 : 111.]

Timora galatheae (Wallengren) Aurivillius, 1925 : 12.

Timora nigrolineata Aurivillius, 1925 : 12. Holotype ♀, Uganda (NR, Stockholm) [examined]. **Syn. n.**

Timora vittulata Aurivillius, 1925 : 12. LECTOTYPE ♂, Sudan (NR, Stockholm), here designated [examined]. **Syn. n.**

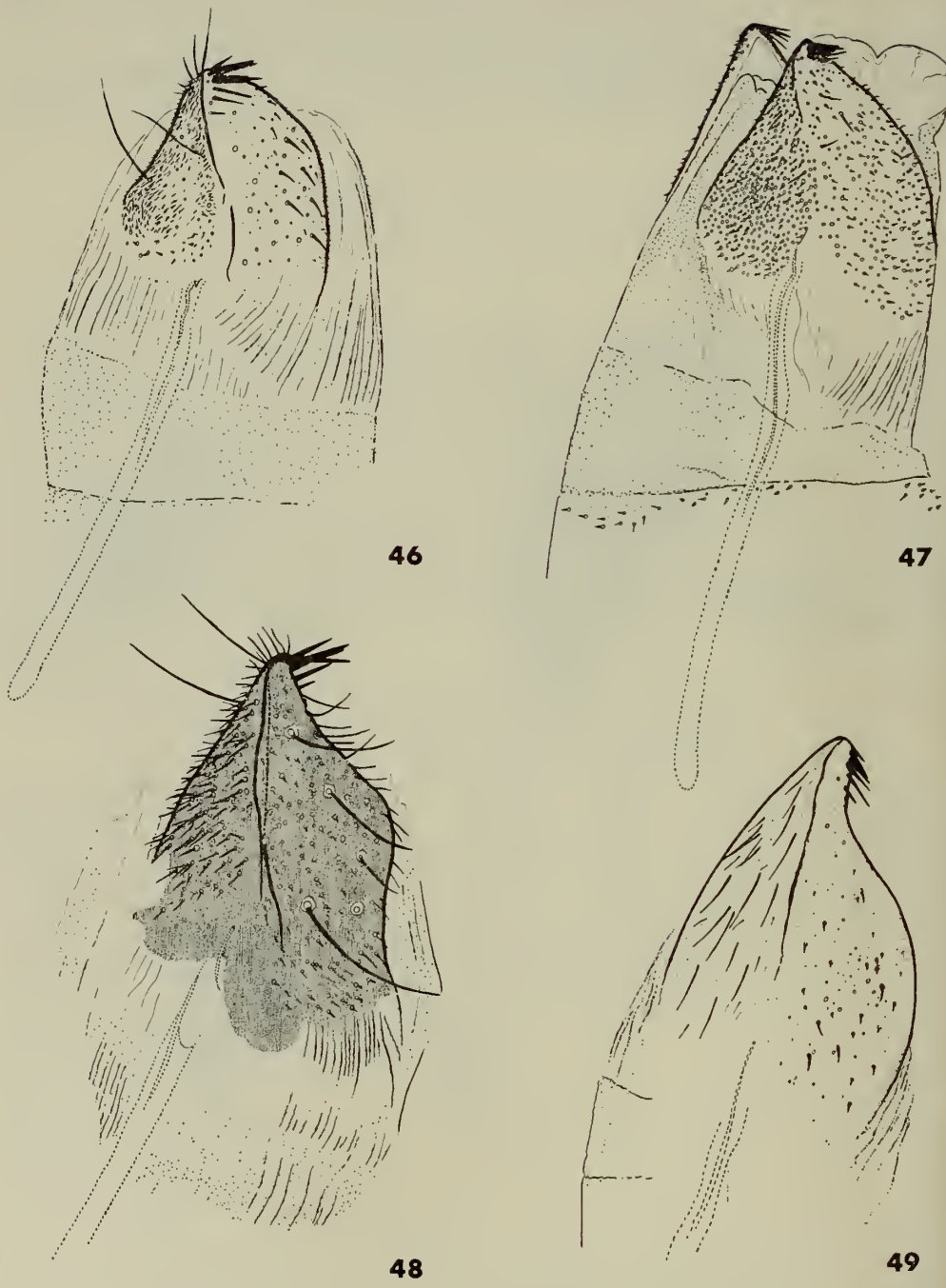
Timora lancea Berio, 1953 : 2. Holotype ♀, Ethiopia: Neghelli, 1441 m, v-vii.1938 (*Nicotra*) (Berio Coll., MCSN, Genoa). **Syn. n.**

Fore wing with areole in all forms except *splendens*; length ♂ (421), 10·5–18·0 (holotype 13·8), ♀ (198), 11·7–20·0. Wing-pattern as in Pl. 3, figs 138–144. Fore wing upper surface with costal and anal regions pink, red or greyish red, central region white to light yellow; typical form and form *splendens* (Pl. 3, figs 138–141) with costal and anal regions pastel pink to greyish rose, central region white or yellowish white; form *nigrolineata* (Pl. 3, fig. 143) with costal and

anal regions greyish red to dull red, central region light yellow; form *imitata* (Pl. 3, fig. 142) with costal and anal regions red to brownish red, central region pale to light yellow. Hind wing upper surface white, immaculate or moderately irrorate with light brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-figs 43–45. ♀ papilla analis modified; terminal spines present (Text-figs 46–49).

FIGS 43–45. *M. galatheae galatheae*, ♂, scobinate bar and cornutus. 43 and 45, extremes of range found in form *galatheae*. 44, form *imitata*.



FIGS 46–49. *M. galatheae galatheae*, ♀, papilla analis. 46 and 47, form *imitata*. 48, form *depicta*. 49, form *galatheae*.

MATERIAL EXAMINED.

Leocyma galatheae, holotype (labelled *Cucullia galathaea* Wallengren), [SOUTH AFRICA:] Caffraria, ♂ (*I. Vahlb*) ['Kaffern Wahlberg' in original description], in NR, Stockholm. *Alaria lanceolata*, holotype, [INDIA: Madras,] Coimbatoor, ♂ (*M. I. Walhouse*). *Adisura splendens*, LECTOTYPE, here designated, GAMBIA, ♀ (*A. Moloney*); paralectotype, [GAMBIA,] 1 ♂ (*Carter*). *Adisura imitata*, LECTOTYPE, here designated, 'COSTA RICA' [in fact almost certainly from West or Central Africa, the printed label 'Costa Rica Van Pattern' having been mistakenly added to the pin], ♂. *Curubasa depicta*, holotype, [INDIA: Maharashtra,] Khandala, ♀ (*C. Swinhoe*). *Timora nigrolineata*, holotype, [UGANDA]: Sembliki, Lake Edward, ♀ (*Swed. Exp. Centr. Africa*), in NR, Stockholm. *Timora vittulata*, LECTOTYPE, here designated, SUDAN: Renk, Nile, ♂, in NR, Stockholm; paralectotypes, SUDAN: ['Renk' according to original description] Nile, 2 ♂, 1 ♀ [type-series 3 ♂, 1 ♀, not 2 ♂, 1 ♀, as stated in original description], in NR, Stockholm.

SENEGAL: Gassane, 1 ♀, 27.viii.1907 (*W. Riggenbach*); Kaolack, 1 ♂, 4 ♀, 1909 (*G. Melou*); Sédhiou, 2 ♂, 2 ♀, 1917 (*H. Castell*); GHANA: Aburi, 1 ♂, 1 ♀, 14.x.1901 (*W. H. Johnstone*); Northern Territories, Kete-Krachi, 21 ♂, 29 ♀; Navaro, 1 ♂, viii.1923 (both *A. W. Cardinall*); TOGO: 3 ♀, 10–14.ix.1893; 1 ♀, 28.ix.1893 (both *L. Conradt*); NIGERIA: Ogruga [?Ogrugru], River Niger, 9 ♂, 2 ♀; Agbaja, 1 ♂, viii–ix.1913 (*D. Caton*); Assaba, R. Niger, 1 ♂ (*Crosse*); Ilesha, 5 ♂ (*Humfrey*); Minna, 4 ♂, 1–6.x.1910; 3 ♂, 1 ♀, 8–9.x.1910; 2 ♂, 18–19.ix.1899 (*G. Migeod*); CAMEROUN: Batouri District, Gadji, 4°30'N, 4°15'E, 750 m, 5 ♂, 1 ♀, 1935 (*F. G. Merfield*); GABON: Tchibanga, 1 ♀, iv.1952 (*P. Rougeot*); CENTRAL AFRICAN REPUBLIC: Fort Crampel, 1 ♂, 1 ♀; ANGOLA: Ambace, 6 ♂ (*Ansorge*); Capelongo-Dongo, 1 ♂, i.1913; Ceramba, 3 ♂, 2 ♀, iii.1903 (*W. C. Bell*); Cubal River, 1 ♂, iii.1899 (*Penrice*); Fazenda Congula, Amboim District, 7–800 m, 7–22.iv.1934 (*K. Jordan*); near Lobita, 1 ♂ (*K. H. Cohlan*); Luimbale, Mt. Moco, 1800–1900 m, 4 ♂, 13.iii.1934, 61 ♂, 9 ♀, 15–20.iii.1934, 1 ♀, 24.iii.1934 (*K. Jordan*); Lunda, Xa Sengue, 1 ♂, 2 ♀, 4–9.iv.1937 (*A. Exell*); Malange, Cocolo, 1 ♂, 10.iv.1937 (*A. Exell*); Quiculungo, 120 km N. of Lucala, 800 m, 5 ♂, 1 ♀, iv.1936 (*R. Braun*); Quirimbo, 75 km E. of Amboim, 300 m, 2 ♂, 1 ♀, 1–6.v.1934; 15 ♂, 26 ♀, 7–12.v.1934; 3 ♂, 4 ♀, 13–20.v.1934 (all *K. Jordan*); SOUTH AFRICA: 2 ♂; Daimana, near Ladysmith, 1 ♂ (*G. A. K. Marshall*); Maritzbourg, 1 ♀ (*Mills*); Modderfontein, 5 ♂, 1 ♀, xi.1920 (*A. V. Langshaw*); 1 ♂, 2 ♀, i.1921 (*A. V. Langshaw*); Natal, 1 ♂ (*Spitter*); 1 ♂; Duff's Road, 1 ♂; Pretoria, 2 ♀; 1 ♂, ii.1895; 1 ♀, 28.x.1894; 1 ♀, xi.1894 (all *W. L. Distant*); Tsomo, 1 ♀, (*J. H. Bowker*); White River, 1 ♀, xii.1908 (*A. T. Cooke*); Weenen, 1 ♀, 1 ♂, i–ii.1928 (*H. P. Thomasset*); Zutrsenka, Waterberg District, 1 ♀, 1.iii.1899. LESOTHO: 1 ♂, 2 ♀; RHODESIA: Mashonaland, 2 ♀ (*H. B. Dobbie*); 1 ♂, 16.xii.1897; 1 ♀, xii.1900; 4 ♂, xii.1904 (all *G. A. K. Marshall*); ZAMBIA: Chinundo Valley, near Lundazi, 1 ♀, 14.iii.1939 (*F. B. Macrae*); Fort Jameson, 3 ♂ (*J. M. Phipps*); Kaluluma Valley, near Lundazi, 1 ♀, 18.iii.1939 (*F. B. Macrae*); Nkala Valley, near Lundazi, 3400 ft, 2 ♂, 19.iii.1939 (*F. B. Macrae*); MALAWI: Kasangazi, near Bandawe, 3000 ft above L. Nyasa, 2 ♂ (*Prentice*); Magunda Estate, Luchenza, 1 ♀ (*F. Nisbet*); Mt. Mlanje, 1 ♂, 27.iii.1913; 2 ♂, 2.iv.1913 (*S. A. Neave*); Zomba Plateau, 1 ♂, iv.1920

(*H. Barlow*); Zomba, 1 ♂, vi.1923 (*H. Barlow*); CONGO (KINSHASA): 1 ♂, Elisabethville, 1 ♀, iii.1925, 1 ♀, 27.iii.1934, 1 ♂ (*Bourguignon*), in MRAC, Tervuren; 2 ♂, 20.iii.1943 (*C. Seydel*), in ZSBS, Munich; 1 ♂, 20.iii.1950 (*C. Seydel*), in MRAC, Tervuren; 9–14.iv.1955 (*C. Seydel*), in ZSBS, Munich; Katanga, Kafakumba, 7 ♂, 1 ♀, iii.1927; Kambove, 4000–5000 ft, 1 ♂, 4.iv.1907; Kassonyi, 1 ♂, viii.1937 (*J. Breolo*), in MRAC, Tervuren; Likasi, 4000 ft, 1 ♂, 20.iii.1919 (*T. A. Barns*); East Luvua Valley, 5700 ft, 2 ♂, ii.1922 (*T. A. Barns*); 3000 ft, 1 ♂, iv.1922 (*T. A. Barns*); Omkoro, 1 ♂, 6.iii.1926; Usumbura, 1 ♂, 5.iv.1926 (*F. G. Jackson*); TANZANIA: Kigonsera, 1 ♂, in ZSBS, Munich; Kilosa, 1 ♂, 19.iv.1923 (*Loveridge*); Madibira, 1 ♂, in ZSBS, Munich; Marungu Plateau, 7000 ft, 2 ♂, 4 ♀, ii.1922 (*T. A. Barns*); Mbeya, 1 ♂, (*E. Ross*); 1 ♂, iii.1950 (*N. Mitton*); Musoma, Banagi Hill, 3 ♂, 2 ♀ (*M. S. Moore*); Shinyanga, Mwandui, 4 ♂, ii.1952 (*Croft*); Ukerewe Island, 1 ♂ (*Conrad*); RWANDA: Gabiru, 1 ♀, 18.x.1932 (*L. A. Burgeon*), in MRAC, Tervuren; UGANDA: 1 ♀ (*W. L. Doggett*); 1 ♂, 17.iii.1923 (*H. Hargreaves*); Ankole, 1 ♂, 5.vii.1928, 1 ♂, 14.x.1928 (both *J. Gastrell*); Motuba Unyoro, 3 ♂, 18.x.1901 (*C. S. Betton*); North Buddu, 3800 ft, 1 ♂, 18.ix.1911 (*S. A. Neave*); south of Lake George, 3200 ft, 1 ♂, 18.x.1911 (*S. A. Neave*); Kickwamba, 1 ♂ (*C. Christy*); Karamoja, Mt. Toror, 1 ♂, vi.1949 (*T. H. E. Jackson*); Mbarara, 1 ♂ (*R. E. McConnell*); Mulema, 1 ♀, v.1903 (*W. L. Doggett*); S. E. Ruwenzori, 3500 ft, 2 ♂, 16 & 20.iv.1906 (*G. Legge & A. F. R. Wollaston*); KENYA: Athi River, 1 ♂, 10.v.1899 (*C. S. Betton*); Eburra, 1 ♂, 21.iii.1900, 1 ♀, 25.iii.1900 (both *C. S. Betton*); Mt. Elgon, 1 ♀, iv.1925 (*G. W. Jeffery*); 1 ♂, v.1934 (*T. H. E. Jackson*); south-west slopes, 2 ♂, 1 ♀ (*H. B. Labbury*); South Kavirondo, Suna, 1 ♀, 20.iii.1930; 3 ♂, iv.1930; 1 ♀, ix.1930; 1 ♂, x.1930; 18 ♂, 1 ♀, iii.1931; 5 ♂, iv.1931; 1 ♂, x.1931; 7 ♂, 2 ♀, xi.1931; 11 ♂, 1 ♀, xii.1931; 3 ♂, i.1932; 1 ♂, 2 ♀, iii.1932; 14 ♂, 12 ♀, iv.1932; 1 ♂, 1 ♀, vi.1932 (all *W. Feather*); Kibauni, 2 ♂, 1 ♀, 4–5.xii.1898 (*R. Crawshay*); Kibwezi, 1 ♀, xii.1921 (*W. Feather*); Kikuyu, near Nairobi, 5400 ft, 1 ♂, 24.iii.1900 (*R. Crawshay*); Kitale, 1 ♂, 10.iv.1931 (*G. W. Jeffery*); 6 ♂, vi–vii.1934 (*G. W. Jeffery*); Lumbwa, 1 ♂, 8.iv.1923 (*G. W. Jeffery*); Machakos, 1 ♂, 13.v.1898; 1 ♂, 6.vi.1898; 1 ♀, 10.xii.1898 (all *R. C. Crawshay*); Mosangaleni, 1 ♂, 25.iv.1928 (*G. H. E. Hopkins*); Nairobi, 1 ♂; 1 ♂, 19.iii.1905 (*F. J. Jackson*); 11 ♂, 1 ♀, iv.1905 (*F. J. Jackson*); 5650 ft, 1 ♂, 11.v.1915 (*A. Loveridge*); 1 ♂, 25.iv.1916 (*W. A. Lamborn*); 1 ♀, 23.vi.1918; 1 ♂, x.1918; 1 ♂, xi.1918 (all *W. H. van Someren*); 2 ♂, iii. 1926 (*van Someren*); 1 ♂, iii.1927 (*D. M. Hopkins*); 2 ♂, 1 ♀, iv.1927 (*D. M. Hopkins*); 1 ♀, xi.1928; 2 ♂, iv.1937; 1 ♂, vii–viii.1936 (all *van Someren*); Nakuru, 2 ♂, 2 ♀, 1 ♂, 6.vi.1943; 1 ♂, 9.iv.1947; 1 ♂, 1.v.1949; 1 ♀, 18.v.1950; 1 ♂, 11.v.1952 (all *A. Townsend*); Nakutu, 1 ♂, 8.v.1921 (*H. A. Bodeker*); Nandi, Moboroni, 1 ♂, vii.1903 (*J. J. Jackson*); Ngong, 1 ♂, vi.1943 (*van Someren*); ETHIOPIA: Dangila, 2 ♂, 9–10.ix.1926; 1 ♂, 29.viii.1930; 3 ♂, 13.ix.1930; 1 ♂, 1 ♀, 1 & 26.ix.1932; Dib Qan, 1 ♂, 22.ix.1932 (all *R. E. Cheesman*); Harar, 1 ♂, 27.viii.1937; 2 ♂, ix–x.1939 (all *R. E. Ellison*); SUDAN: Blue Nile Province, Toz, 1 ♂, 20.viii.1960 (*H. Schmutterer*), in ZSBS, Munich; Darfur Province, Kulme, 7 ♀, vi–x.1921 (*H. Lynes*); Gondokoro, White Nile, 3 ♂ (*W. E. Rymes-Cole*); 2 ♂ (*Dabbene*); Kordofan Province, Kadugli, 1 ♀, 29.viii.1962 (*H. Schmutterer*), in ZSBS, Munich; Mongalla, White Nile, 5 ♂, 20.x.1917 (*Yardley*); Tambura, 4 ♂, 2 ♀; White Nile, 10°12′N, 2 ♂, 5 ♀ (*Yardley*); INDIA: southern India, 6 ♂, 2 ♀; Madras, Nilgiris, 1 ♂,

1 ♀; Madhya Pradesh, Jubblepore, 1 ♀, 17.ix.1905 (*C. S. Betton*); M. P., Mhow, 1 ♂, 1 ♀, ix.1886 (*C. Swinhoe*); M. P., Wynaad, 2 ♂; Mysore, Belgaum, 1 ♂ (*T. R. Bell*); M., Belgaum, 1 ♀, 29.ii.1922 (*T. R. Bell*).

DISTRIBUTION (Map 5). Africa south of the Sahara; central and southern India.

REMARKS. This subspecies may be recognized by the modified form of the papilla analis, which is simple in *M. g. bechuana*.

The synonymy of *Timora lancea* is based on a photograph presented by Dr E. Berio of one of the paratypes, and on a specimen from the BMNH Collection identified by him.

MAP 5. Distribution of subspecies of *M. galatheae*.

Masalia galatheae bechuana subsp. n.

(Text-figs 50, 51; Pl. 3, figs 145–149; Map 5)

Fore wing with areole; length ♂ (10), 12·6–15·0 (holotype 14·2), ♀ (18), 12·7–16·5. Wing pattern as in Pl. 3, figs 145–149. Fore wing upper surface with costal and anal regions either light yellow or dull red to greyish pink; central region pale yellow immaculate or irrorate between veins with dark brown. Hind wing upper surface white to pale yellow.

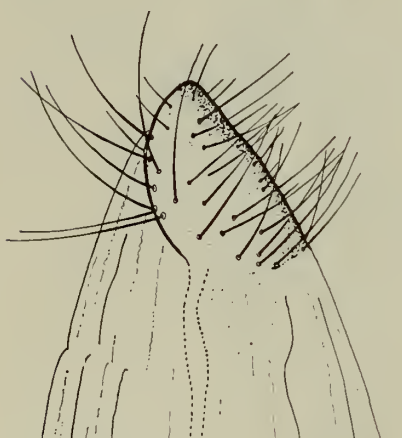
Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 51. ♀ papilla analis simple (Text-fig. 50).

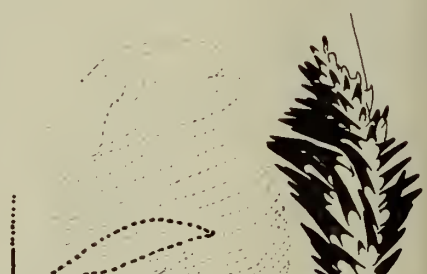
Material examined.

Holotype, [Botswana] British Bechuanaland: Upington, ♂, 13.iii.1950 (*H. B. Kettlewell*).

Paratypes. South West Africa: Hoffnung, 1850 m, 3 ♂, 10.i.1934; Okahandja, 1 ♂, 10–16.ii.1928; 1 ♀, 2–18.iii.1928 (both *R. E. Turner*); 1 ♀, 4.iii.1949; 1 ♀, 30.i.1953; 1 ♂, 1 ♀, 30 and 25.i.1954; 3 ♀, 24–25.iii.1954 (all *F. Gaerdes*), in ZSBS, Munich; Windhoek, 1650 m, 2 ♀, 16 and 23.i.1934 (*K. Jordan*); [Botswana] British Bechuanaland: Okahandja, 1320 m, 1 ♂, 1–4.i.1934 (*K. Jordan*); Upington, 1 ♂, 10 ♀, 12–14.iii.1950 (*H. B. Kettlewell*); [South Africa] Transvaal: Zutrsenka (Waterberg District), 1 ♂, i–iii.1899.

Distribution. South West and South Africa.





Figs 50–51. *M. galatheae bechuana*, genitalia. 50, ♀, papilla analis. 51, ♂, scobinate bar and cornutus.

REMARKS. *M. g. bechuana* can be separated from the nominate subspecies on difference in the female papilla analis, simple in *M. g. bechuana*, of modified form in *M. g. galatheae*.

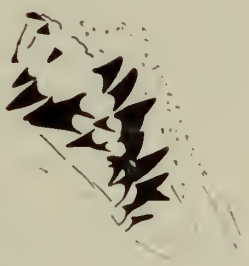
Masalia cruentata (Moore) **comb. n.**

(Text-figs 52–54; Pl. 4, figs 150–152; Map 6)

Curubasa cruentata Moore, 1881 : 367. LECTOTYPE ♂, INDIA (BMNH), here designated [examined].

Curubasa marginata Moore, 1881 : 367. LECTOTYPE ♀, INDIA (BMNH), here designated [examined]. [Synonymized by Hampson, 1903 : 112.]

Timora cruentata (Moore) Hampson, 1903 : 112.



FIGS 52–54. *M. cruentata*, genitalia. 52, ♀, papilla analis. 53 and 54, ♂, scobinate bar and cornutus.

Fore wing with areole usually present; length ♂ (52), 11·2–18·5 (lectotype 14·1), ♀ (32), 12·7–18·2. Wing pattern as in Pl. 4, figs 150–152. Fore wing upper surface with costal region white to pale yellow, immaculate or costa tipped with pink or pale or greyish red; occasionally entire costal region pink, pale or greyish red. Central region white to pale yellow; anal region pink, pale or greyish red or light to reddish brown. Hind wing upper surface white to pale yellow, immaculate or lightly irrorate with greyish brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-figs 53, 54. ♀ papilla analis modified, terminal spines absent (Text-fig. 52).

MATERIAL EXAMINED.

Curubasa cruentata, LECTOTYPE, here designated, [INDIA:] North West India (Cashmir, Noashera—from original description), (labelled ♀); paralectotype, [INDIA:] North West India, ♀. *Curubasa marginata*, LECTOTYPE, here designated, [INDIA]: North West Himalaya, ♂; paralectotype, [INDIA:] North West India, ♀.

INDIA: Himachal Pradesh, Dharmsala, 3 ♂; H.P., Kasauli, 1 ♂, 28.viii.1905; H.P., Kula District, 1 ♂, 5 ♀; H.P., Sabathu, 1 ♀, vii.1889; H.P., Solon, 3 ♂, viii.1896; 1 ♂, ix.; H.P., Sultanpur, 1 ♀; NEPAL: Pakhara, 28°14'N, 83°59'E, 1 ♂, 16.ix.1955; Tuckucha, 28°43'N, 83°39'E, 1 ♀, 12.ix.1955—both Zool. Staatssamml., München. TIBET: Batang, 2800 m, 1 ♀, 17.viii.1936; 1 ♂, 21.viii.1936—both Mus. Bonn; CHINA: Chekiang, West Tien-mu-shan, 1 ♂, 24.iv.1932; Shantung, Tai-shan, 1550 m, 1 ♀, vi.1934; 1 ♂, 3.viii.1934; 1 ♀, 5.viii.1934; 1 ♂, 4.viii.1934; 1 ♂, 1 ♀, 8.viii.1934;

MAP 6. Distribution of *M. cruentata*.

2 ♀, 9.viii.1934; 10 ♂, 3 ♀, 11.viii.1934; 5 ♂, 1 ♀, 12.viii.1934; 5 ♂, 4 ♀, 13.viii.1934; 1 ♂, 17.viii.1934; 1 ♂, 1 ♀, 28.viii.1934—all in MAK, Bonn; Tsekou, 3 ♂, 2 ♀; Yunnan, 1 ♂, 1 ♀, 1918; Yunnan, Li-Kiang, 2000 m, 1 ♀, 24.vii.1934; 1 ♂, 8.viii.1934; 1 ♀, 18.x.1934; 1 ♀, 25.vii.1935—Li-Kiang material from MAK, Bonn.

DISTRIBUTION (Map 6). North India, Nepal, Tibet and south-west and central east China.

REMARKS. Differences between *M. cruentata* and the closely related *M. galatheae* are given under the heading of *galatheae–cruentata* complex. The material from Tai-shan is atypical in that, with few exceptions, an areole is absent; a long series was collected from this locality. The similarity to one another in other respects of these specimens, and the short period over which they were caught, suggests that they formed part of a local inbred population.

Masalia flaviceps (Hampson) **comb. n.**

(Text-figs 55, 56; Pl. 4, fig. 159)

Timora flaviceps Hampson, 1903 : 116. Holotype ♂, NIGERIA (BMNH) [examined].

Fore wing without areole; length ♂ (34), 11·0–13·2 (holotype 12·0), ♀ (6), 12·4–14·0. Wing pattern as in Pl. 4, fig. 159. Fore wing upper surface white; in a few specimens the costal and anal regions are slightly tinged with yellow, with just sufficient contrast for divisions between the regions to be made. Hind wing upper surface white.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 56. ♀ papilla analis modified; terminal spines present and dorso-lateral surface clothed in fine hair (Text-fig. 55).

MATERIAL EXAMINED.

Timora flaviceps, holotype, NIGERIA: Borgu, Yelwa Lake, ♂, 2.x.1899 (*G. Migeod*).

SENEGAL: Kaolack, 7 ♂, 1 ♀, 1909 (*G. Melou*); GHANA: Kete-Krachi, 16 ♂, 3 ♀ (*A. W. Cardinall*); Navaro, 2 ♂, 1 ♀, x.1923 (*A. W. Cardinall*); NIGERIA: Minna, 1 ♂, 1 ♀, 13.x.1910 (*Scott Macfie*); Zungeru, 2 ♂, 25.x.1910 (*Scott Macfie*); SUDAN: White Nile, 11°12′N, 2 ♂ (*Yardley*); 11°15′N, 2 ♂ (*Yardley*); ETHIOPIA: 1 ♂ (paralectotype of *Timora hololeuca* Hampson).

DISTRIBUTION. From West Africa to Ethiopia.

REMARKS. *M. flaviceps* is probably most closely allied to *M. galatheae*. Structurally there is no apparent difference, and differentiation of the wing regions traceable in a few specimens of *M. flaviceps* reveals the *M. galatheae* pattern. Never the less, on colour the two species are readily distinguished: in *M. flaviceps* the costal and anal regions are white or white tinged with yellow, whereas in *M. galatheae* the costal and anal regions are pink. *M. hololeuca*, the only other white species in *Masalia*, can be separated on difference in the form of the female papilla analis: modified in *M. flaviceps*, simple in *M. hololeuca*.

Masalia hololeuca (Hampson) **comb. n.**

(Text-fig. 57; Pl. 4, fig. 153)

Timora hololeuca Hampson, 1903 : 117. LECTOTYPE ♂, India (BMNH), here designated [examined].

Fore wing with areole; length ♂ (10), 11·1–13·5 (lectotype 11·9), ♀ (10), 12·6–15·0. Wing pattern as in Pl. 4, fig. 153. Fore wing upper surface white. Hind wing upper surface white. Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 57. ♀ papilla analis simple.

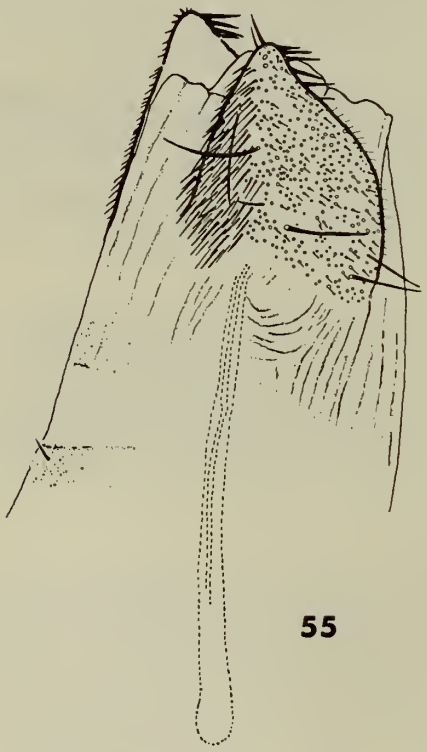
Material examined.

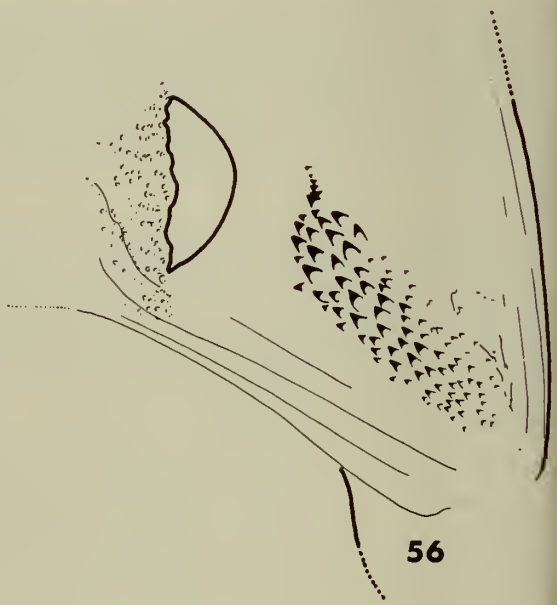
LECTOTYPE, here designated, [India: Mysore] Madras, Belgaum, ♂, x.1896 (*Watson*).

India: Maharashtra, Nasik, 2 ♂, 1 ♀, ix.1892; southern India, 5 ♂, 5 ♀ (*T. R. Bell*); ?, C. Rock, 2 ♂, 5 ♀, x. 1892.

Distribution. Central and southern India.

Remarks. *M. hololeuca* can be distinguished from *M. flaviceps* (the only other white species in the genus) on the absence and presence, respectively, of an areole,





Figs 55–56. *M. flaviceps*, genitalia. 55, ♀, papilla analis. 56, ♂, scobinate bar and cornutus.

and in the female, on the difference in form of the papilla analis, simple in *M. hololeuca* and modified in *M. flaviceps*.

The type-series of this species comprised three males, two from India and one from Ethiopia. The Ethiopian male is in fact a specimen of *M. flaviceps*, and the second Indian male is lost.

Masalia radiata Moore

(Text-figs 58–61; Pl. 4, figs 154–158)

Masalia radiata Moore, 1881 : 364.

M. radiata, though showing variability in colour, is marked similarly to other species within the group. Two subspecies are recognized, the nominate subspecies, a small brown moth from northern India and *M. r. terracotta*, larger, light to reddish brown, from central and southern India, west Bengal and Sikkim. Within the *radiata*-group, *radiata* can be separated from all but one species, *flavistrigata*, on differences in structure of the female genitalia. In *radiata* the papilla analis is modified; in *rubristria*, *beatrix* and *epimethea*, simple. In *roseivena* and *rosacea*, which have modified papilla anali, terminal spines are present, but these are lacking in *radiata*. Though the relationship between *radiata* and *flavistrigata* is probably no closer than between *radiata* and any other species in the group, no single character common to both subspecies has been found to separate *radiata* from *flavistrigata*.

FIG. 57. *M. hololeuca*, ♂, scobinate bar and cornutus.

Each subspecies however, can be separated using a different single character, the brown upper surface of the hind wing in *M. r. radiata* and the non-overlapping scobinate bar spicules in *M. r. terracotta*. In *flavistrigata* the upper surface hind wing colour is white and the scobinate bar spicules overlap.

Masalia radiata radiata Moore

(Text-fig. 59; Pl. 4, figs 154, 155)

Masalia radiata Moore, 1881 : 364. LECTOTYPE ♂, India (BMNH), here designated [examined].

The subspecies is known only from male specimens. The papilla analis is assumed to be as in *M. r. terracotta*.

Fore wing with areole; length, ♂ (2), 10·6 (lectotype). Wing pattern as in Pl. 4, figs 154, 155. Fore wing upper surface with ground colour brownish orange to light brown; upper central longitudinal streak white. Hind wing upper surface brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 59.

Material examined.

LECTOTYPE, here designated, [India: Uttar Pradesh,] N. W. Provinces, [Mainpuri] Manpuri, 1 ♂.

India: Rajasthan, Ajmer, 1 ♂, 14.viii.1892.

Distribution. North India.

Remarks. Externally *M. r. radiata* can be distinguished from *M. r. terracotta* on size and colour of hind wing. *M. r. radiata* is smaller (fore wing length 10·6 mm in *radiata*, 11·0–15·4 mm in *terracotta*) with brown hind wings; the hind wings of *M. r. terracotta* are white or greyish to brownish orange. The males of the two subspecies can be distinguished on the closeness of the scobinate bar spicules: overlapping in *M. r. radiata*, non-overlapping in *M. r. terracotta*.

Masalia radiata terracotta Hampson **stat. n.**

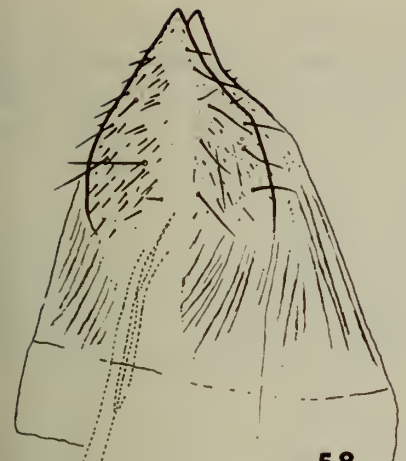
(Text-figs 58, 60, 61; Pl. 4, figs 156–158)

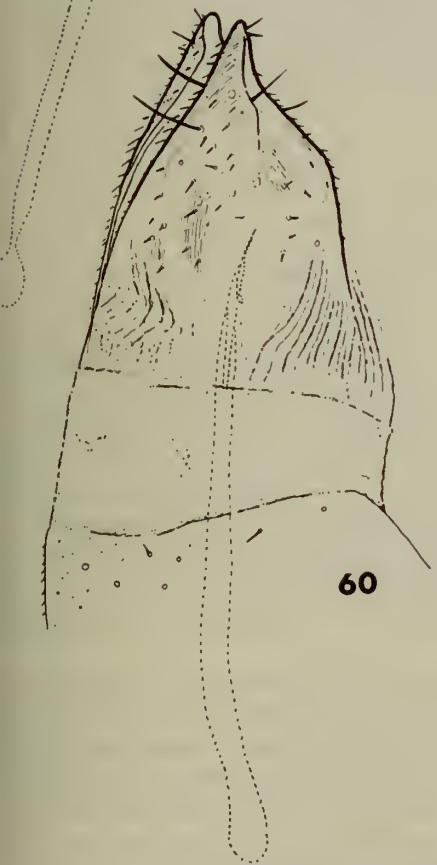
Masalia terracotta Hampson, 1891 : 71. LECTOTYPE ♂, India (BMNH), here designated [examined].

Timora flavia Hampson, 1903 : 113. LECTOTYPE ♂, India (BMNH), here designated [examined]. **Syn. n.**

Fore wing with or without areole; length ♂ (32), 11·0–13·5 (lectotype), ♀ (15), 12·2–15·4. Wing pattern as in Pl. 4, figs 156–158. Fore wing upper surface with ground colour pale yellow or light to brownish orange. Upper central longitudinal streak white. In specimens with pale yellow grounds, the upper central longitudinal streak may be outlined or partly outlined in greyish red or light brown. Hind wing upper surface white or greyish to brownish orange.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 61. ♀ papilla analis modified, terminal spines absent (Text-figs 58, 60).





FIGS 58–61. 58, *M. radiata terracotta*, ♀, papilla analis. 59, *M. r. radiata*, ♂, scobinate bar and cornutus. 60, *M. r. terracotta*, ♀, papilla analis. 61, *M. r. terracotta*, ♂, scobinate bar and cornutus.

Material examined.

Masalia terracotta, LECTOTYPE, here designated, [India: Madras,] Nilgiris, ♂, paralectotypes, [India: Madras,] Nilgiris, 1 ♂, 1 ♀. *Timora flavia*, LECTOTYPE, here designated, [India: Mysore,] Belgaum, ♂, x.1896 (*Watson*); paralectotypes, (India: Madhya Pradesh,] Mhow, 1 ♀, ix.1881 (*C. Swinhow*); [Mysore,] Belgaum, 1 ♀, ix.1896 (*Watson*); Deccan, 1 ♂ (*Sykes*); southern India, Wynád, 1 ♂.

India: Maharashtra, Bombay, 3 ♂; M., Nasik, 3 ♂; Mysore, Belgaum, 1 ♂, 1 ♀, ix.1896; 2 ♂, 4 ♀ (*T. R. Bell*); Kerala, Peermade, 2 ♂, 1 ♀ (*Imray*); K., 1 ♂; southern India, 2 ♂ (*T. R. Bell*); Madras, Nilgiris, 3000 ft, 1 ♀ (*Hampson*); Madhya Pradesh, Mhow, 1 ♂, 2 ♀, ix.1881 (*C. Swinhoe*); West Bengal, Darjeeling, 1 ♀ (*Pilcher*); Sikkim: 1 ♂, v.1893. 11 ♂, 2 ♀ specimens with localities indistinctly written.

Distribution. India and Sikkim.

Remarks. The two subspecies can be separated on difference in size and hind wing colour: *M. r. terracotta* is larger (compare fore wing length) with white or greyish to brownish orange hind wings; the hind wings in *M. r. radiata* are brown. Non-overlapping scobinate bar spicules in the male of *M. r. terracotta*, contrasted with the overlapping spicules in *M. r. radiata*, also distinguish between them.

Masalia rubristria (Hampson) **comb. n.**

(Text-figs 62–64; Pl. 5, figs 162–170; Map 7)

Timora rubristria Hampson, 1903 : 112.

M. rubristria is a variable species both in colour and marking, closely allied to *M. epimethea* and *M. beatrix*. The species is divided into three subspecies. Of these three, two (*M. r. rubristria* and *M. r. transvaalica*) have no areole and, on the absence of this character, are separated from *M. epimethea* and *M. beatrix*. The third subspecies, in which an areole is present, *M. r. rhodomelaleuca*, can be distinguished from *M. epimethea* and *M. beatrix* on differences in fore wing colour.

M. rubristria can be separated from the remaining species in the *radiata*-group (the only others in the genus likely to be confused with it) by the form of the female papilla analis, simple in *M. rubristria*, modified in *M. flavistrigata*, *M. radiata*, *M. rosacea* and *M. roseivena*.

Differences occur between monomorphs from a number of localities; the similarity of monomorphs from others, and from at least one locality the occurrence together of dimorphs, each variant known from at least one other locality as a monomorph (see under discussion of *M. r. rubristria*), cannot be satisfactorily resolved without further material and investigation. The tentative division of the material into three subspecies is primarily based on geographic separation of the known material. Structurally however, on the presence of an areole, *M. r. rhodomelaleuca* can be separated from subspecies *rubristria* and *transvaalica*. *M. r. rubistria* and *M. r. transvaalica* differ in the colour of their fore wing markings, light brown, brownish

or reddish brown in *rubristria*, pale to pastel or greyish red in *transvaalica*. Specimens which are not clearly recognized on colour may be separated on size; of the two, *transvaalica* is larger though the ranges of the two subspecies do overlap.

Masalia rubristria rubristria (Hampson)

(Text-figs 62, 63; Pl. 5, figs 162–165; Map 7)

Timora rubristria Hampson, 1903 : 112. Holotype ♂, NIGERIA (BMNH) [examined].
Timora multistriata Bethune-Baker, 1911 : 507. LECTOTYPE ♂, NIGERIA (BMNH), here designated [examined]. **Syn. n.**
Timora sanguistria Berio, 1966 : 111. Holotype ♂, SENEGAL (MNHN, Paris) [examined]. **Syn. n.**

Fore wing without areole; length ♂ (32), 11·4–15·3 (holotype 11·9), ♀ (20), 11·9–16·2. Wing pattern as in Pl. 5, figs 162–165. Fore wing upper surface with pattern and colouring variablein ; Pl. 5, figs 162, 163, 164, central and anal regions white with white-brown, brown, or reddish brown markings; costal region either yellowish white, pale yellow, light brown or brown; in Pl. 5, fig. 165, ground colour pale yellow, upper central and anal longitudinal streaks white, outlined with greyish rose. Hind wing upper surface white, marginally irrorate with light brown, or light brown (*sanguistria* holotype).

Genitalia. ♂ scobinate bar and cornutus as in Text-figs 62, 63. ♀ papilla analis simple.

MATERIAL EXAMINED.

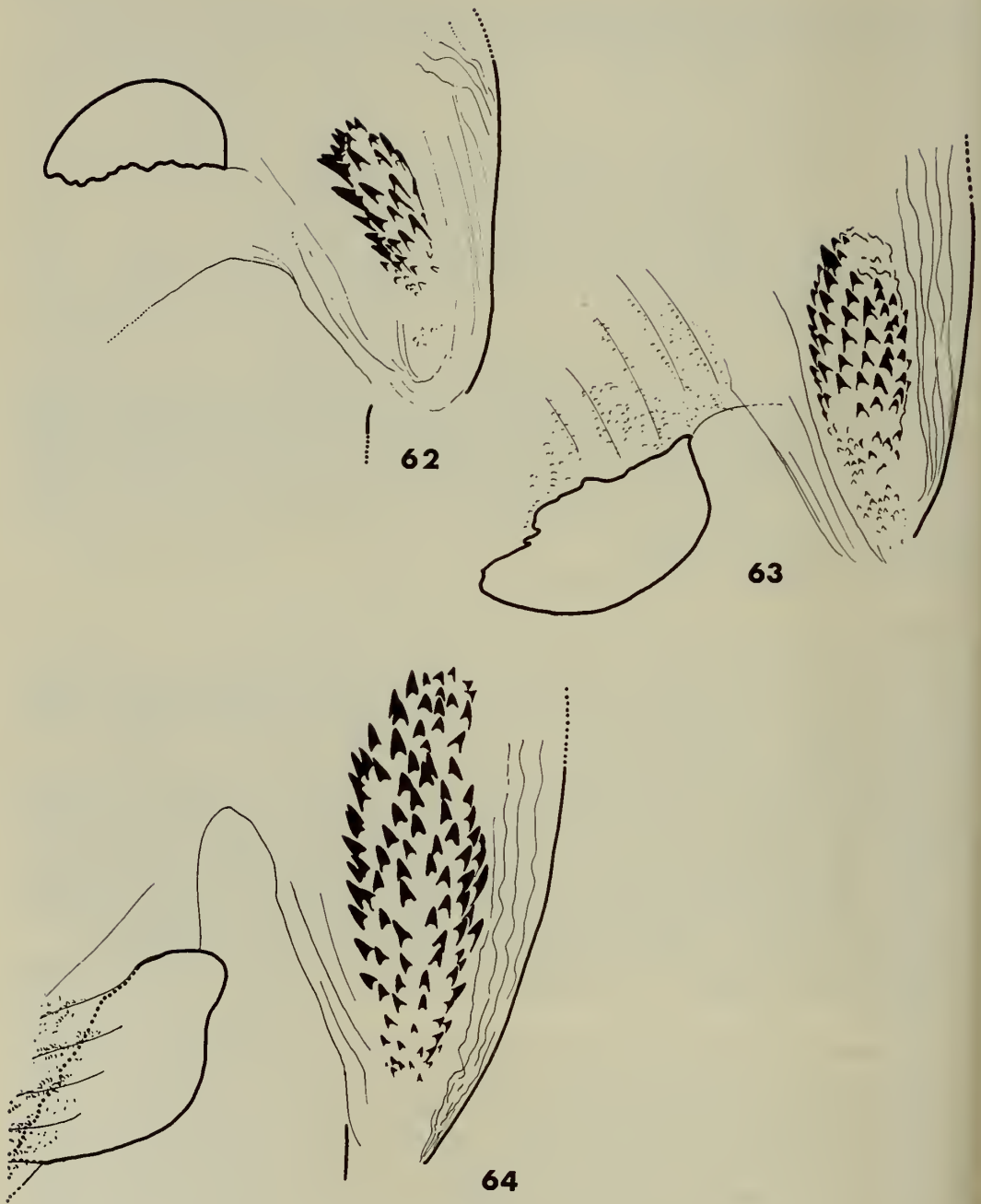
Timora rubristria, holotype, NIGERIA: Asaba, ♂ (*Crosse*). *Timora multistriata*, LECTOTYPE, here designated, NIGERIA: 100 miles north of Lokoja, ♂ (*D. Cator*). *Timora sanguistria*, Holotype, SENEGAL: Badi, ♂ [Institut français d'Afrique noire Dakar (Senegal)], MNHN, Paris.

SENEGAL: Kaolack, 1 ♂ (*G. du Dresnay*), in MNHN, Paris; 1 ♂ (*LeMoult*); GUINEA: Diondougou, 1 ♂ (*L. J. De Joannis*), in MNHN, Paris; GHANA: Gambaga, 11 ♂, 11 ♀ (*Bury*); Kete-Krachi, 6 ♂, 5 ♀ (*A. W. Cardinall*); [Nararo] Navaro, 2 ♂ (*A.W.Cardinall*); NIGERIA: Ogruga [?Ogrugru], River Niger, 1 ♀; Baro, 1 ♀, 25.ix.1910 (*Scott Macfie*); Minna, 2 ♂, 1.x.1910 (*Scott Macfie*); 100 miles north of Lokoja, 1 ♂ (*D. Cator*); CENTRAL AFRICAN REPUBLIC: Fort Crampel, 3 ♂, 2 ♀ (*LeMoult*).

DISTRIBUTION (Map 7). Senegal, Guinea, Ghana, Nigeria and Central African Republic.

REMARKS. The absence of an areole and the brown or reddish brown fore wing markings in *M. r. rubristria* separate it from *M. r. rhodomelaleuca* (areole present) and *M. r. transvaalica* (fore wing pale, pastel-, or greyish red), respectively.

Specimens similar to the lightly marked one from Guinea are known from Minna (Nigeria) and Nararo (Ghana) (Text-fig. 165). A second variant (Text-fig. 162) is also known from this latter locality. Specimens from Fort Crampel (Central African Republic), Kete Krachi (Ghana) and Gambaga (Ghana) are essentially alike. Fort Crampel specimens are larger and have slightly wider, white longitudinal streaks. Of the remaining material variation occurs from locality to locality.



FIGS 62–64. *M. rubristria* subspecies, ♂, scobinate bar and cornutus. 62 and 63, *M. r. rubristria*. 64, *M. r. transvaalica*.

Masalia rubristria transvaalica (Distant) **comb. et stat. n.**

(Text-fig. 64; Pl. 5, figs 166–169; Map 7)

Timora transvaalica Distant, 1902 : 212. LECTOTYPE ♂, South Africa (BMNH), here designated [examined].

Timora rosea Gaede, 1915 : 39. LECTOTYPE ♂, South Africa (MNHU, Berlin), here designated [examined]. **Syn. n.**

Fore wing without areole; length ♂ (21), 13·8–17·5 (lectotype 17·3), ♀ (4), 15·8–17·8. Wing pattern as in Pl. 5, figs 166–169. Fore wing upper surface with pattern and colouring variable: in Pl. 5, figs 166, 167, ground colour pale to pastel-red, occasionally with a number of veins lightly outlined in brown, upper central and anal longitudinal streaks (when present) white; in Pl. 5, figs 168, 169, ground colour yellowish white to pale yellow, radial, medial, cubital and anal veins outlined in pastel to greyish red. Hind wing upper surface white, pale to pastel-red, or light brown to brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 64. ♀ papilla analis simple.

Map 7. Distribution of subspecies of *M. rubristria*.

Material examined.

Timora transvaalica, LECTOTYPE, here designated, [South Africa:] Transvaal, Johannesburg, ♂ (*J. Hyde*); *Timora rosea*, LECTOTYPE, here designated, [South Africa:] Transvaal, White River, ♂, ii.1911 (*A. T. Cooke*), in MNHU, Berlin.

Kenya: Kavirondo, Suna, 10 ♂, iii.1931; 3 ♂, iv.1931; 1 ♂, xi.1931; 1 ♂, ii.1932; Tanzania: Kalambo River, 1 ♀; Kilossa, 1 ♂, 28.iii.1922; Njombe, 6000–6500 ft, 1 ♂, 19.ii.1952 (*W. Peters*); Congo (Kinshasa): Elisabethville, 2 ♂, 3, 5.iii.1949 (*Ch. Seydel*), in MRAC, Tervuren; Zambia: Kapapi, 1 ♂, 17.iii.1939 (*F. B. Macrae*); Rhodesia: Sinoia, 1 ♂, 21.ii.1950 (*N. Mitton*); South Africa: Transvaal White River, 1 ♂, 10.i.1910 (*A. T. Cook*); 2 ♀ (*C. H. Pead*).

Distribution (Map 7). Kenya, Tanzania, Congo (Kinshasa), Zambia, Rhodesia and South Africa.

Remarks. The absence of an areole from *M. r. transvaalica* separates it from *M. r. rhodomelaleuca*; *M. r. transvaalica* and *M. r. rubristria* are fairly readily distinguished on the colour difference of the fore wing markings, pale, pastel to greyish red in *M. r. transvaalica*, brown or red in *M. r. rubristria*.

Across the range of *M. r. transvaalica* differences in colour and pattern occur in a number of localities.

Masalia rubristria rhodomelaleuca (Berio) comb. et stat. n.

(Pl. 5, fig. 170; Map 7)

Timora rhodomelaleuca Berio, 1943 : 182. Holotype ♂, Ethiopia: Elaberet, 17.ix.1938 (*G. Vaccaro*) (Berio Coll., MCSN, Genoa).

Fore wing with areole; length ♀ (1), 15·4. Wing pattern as in Pl. 5, fig. 170. Fore wing upper surface with costal and anal regions light to greyish orange; central region with proximal and disto-radial areas brown, disto-cubital area light to greyish orange; upper central longitudinal streak white. Hind wing upper surface light to yellowish brown.

Genitalia. ♀ papilla analis simple.

Material examined.

[Paratype] allotype, [Ethiopia] Eritrea: Elaberet, ♀, 1.ix.1938 (*F. Vaccaro*), in MCSN, Genoa.

Distribution (Map 7). Ethiopia.

Remarks. The presence of the areole in *M. r. rhodomelaleuca* distinguishes it from both *M. r. transvaalica* and the nominate subspecies.

Masalia beatrix (Moore) comb. n.

(Text-figs 65–66; Pl. 6, figs 174–178)

Pradatta beatrix Moore, 1881 : 365.

Fore wing with areole.

Two subspecies are recognized, *beatrix* from India and *trifasciata* from Africa. Whilst the fore wing pattern in the African subspecies is fairly constant, that of the

Indian subspecies is variable and makes separation of the two difficult. The fore wing central region in *M. b. trifasciata* differs in colour from the costal and anal regions and is clearly deliminated from them; there is always a well differentiated brown to dark brown lower central longitudinal streak. In *M. b. beatrix* the central region is similarly coloured to the costal and anal regions and with incursion of colour from these outer regions, the central region is not clearly deliminated. The lower central longitudinal streak, when present, ranges from light orange to pastel-red. Occasionally it is suffused with brown but in contrast to the brown streak in *M. b. trifasciata*, any brown marking present is narrow and poorly defined.

M. beatrix is distinguishable from other species in the *radiata*-group on genitalic characters. The simple form of the papilla analis in *M. beatrix* separates it from *M. flavistrigata*, *M. radiata*, *M. rosacea* and *M. roseivena*; in the latter four, the papilla analis is modified. Overlapping scobinate bar spicules in *M. beatrix* separate it from the remaining two species, the African *M. rubristria* and the Madagascan *M. epimethea;* in M. *rubristria* and *M. epimethea* the spicules are non-overlapping.

Masalia beatrix beatrix (Moore)

(Text-fig. 65; Pl. 6, figs 174–176)

Pradatta beatrix Moore, 1881 : 365. LECTOTYPE ♂, India (BMNH), here designated [examined].
Timora beatrix (Moore) Hampson, 1903 : 114.
Timora nigristriata Hampson, 1903 : 110. Holotype ♂, India (BMNH) [examined]. **Syn. n.**

Fore wing, length ♂ (12), 12·9–14·9 (lectotype 14·2), ♀ (17), 12·6–15·4. Wing pattern as in Pl. 6, figs 174–176. Fore wing upper surface with costal and anal regions orange-white to light orange or reddish white to pastel-red, central region white to yellowish white, streaked with the same colour as the costal and anal regions and with costal and anal region colouring extending in from these regions. Depending upon incursion of colour and extent of streaking a lower, central, longitudinal streak may be differentiated; when present the streak is immaculate or irrorate with light brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 65. ♀ papilla analis simple.

Material examined.

Pradatta beatrix, LECTOTYPE, here designated, [India: Punjab,] Dharmsala, ♂ (*Hocking*); paralectotypes, [India: Punjab,] Dharmsala, 2 ♂, 2 ♀ (*Hocking*); *Timora nigristriata*, holotype [India: Mysore,] Belgaum, ♂, ix.1896 (*E. Watson*).

India: Rajasthan, Ajmer, 1 ♂, 28.vii.1892; 1 ♂, 4.viii.1892; 1 ♀, 10.viii.1992; Himachal Pradesh, Mandi, 3–5000 ft, 1 ♀, 1883 (*G. Young*); H. P., Kangra, 1 ♀, 1884; N.W. Himalaya, 1 ♂; Maharashtra, Nasik, 1 ♂, 4 ♀, ix.1892; M., Nagpur, Chota, 1 ♀, 1911; Kerala, Peermade, 1 ♂ (*Imray*); K., 1 ♂, 1 ♀ (*Place*); southern India, 1 ♀ (*T. R. Bell*); Madras, Cuddapah, 1 ♂ (*Campbell*); M., Nilgiri Hills, 1 ♀; ?, Simla, 7000 ft, 1 ♀ (*A. E. Jones*); West Bengal, Darjeeling, 1 ♂ (*Pilcher*); 1 ♀ (*C. R. Oakes*).

Distribution. India.

Remarks. The absence of a brown lower central longitudinal streak (or at most

presence of a streak irrorate with brown and forming a fine brown streak within the longitudinal streak) distinguishes *M. b. beatrix* from *M. b. trifasciata*. In *M. b. trifasciata* the lower central longitudinal streak is always well defined and brown to dark brown in colour.

Masalia beatrix trifasciata (Hampson) **comb. et stat. n.**

(Text-fig. 66; Pl. 6, figs 177, 178)

Timora trifasciata Hampson, 1903 : 110. Holotype ♀, KENYA (BMNH) [examined].

Fore wing, length ♂ (10), 14·2–15·8, ♀ (15), 15·0 (holotype)–16·4 (5). Wing pattern as in Pl. 6, figs 177, 178. Fore wing upper surface with costal and anal regions from pastel to greyish red; anal region lightly to moderately irrorate with dark brown. Central region white to orange-white. Lower central, and longitudinal streak between R_5–M_1, dark brown; R_5–M_1 streak faintly to well developed. Hind wing upper surface white to orange-white, distally light to moderately irrorate with brown.

Genitalia. ♂ scobinate bar and cornutus (Text-fig. 66). ♀ papilla analis simple.

MATERIAL EXAMINED.

Holotype [KENYA] B. E. Africa: [Stony Athi, River Athi,] Stony River, ♀, 2.xii.1898 (*R. Crawshay*).

KENYA: Kavirondo, 1 ♂, 1 ♀, iii.1931 (*W. Feather*); 1 ♂, iv.1932 (*W. Feather*); Kibwezi, 1 ♂, iii.1922 (*W. Feather*); TANZANIA: Musoma, Banagi Hill, 1 ♂, 1 ♀ (*M. S. Moore*); Shinyanga, Mwandui, 1 ♂, xii.1951; 1 ♂, i.1952; 1 ♂, 1 ♀, ii–iii.1952; 1 ♂, iii.1952 (all *Croft*).

DISTRIBUTION. Kenya and Tanzania.

FIGS 65–66. *M. beatrix* subspecies, ♂, scobinate bar and cornutus. 65, *M. b. beatrix*. 66, *M. b. trifasciata*.

REMARKS. The presence of a pronounced brown lower longitudinal streak in *M. b. trifasciata* distinguishes it from *M. b. beatrix*. When present, the streak in *M. b. beatrix* is of orange or red colour, occasionally irrorate with brown. A brown streak may be formed through dense irroration but in those specimens in which this occurs, the streak is always set within a wider streak of orange or red; in *M. b. trifasciata* the central longitudinal streak is unicolorous.

Masalia epimethea (Viette) **comb. n.**

(Text-fig. 67; Pl. 4, figs 160, 161)

Timora epimethea Viette, 1958 : 149. Holotype ♀, MADAGASCAR: centre, district de Fianarantsao, Ambalavao, iii.1956 (*A. Robinson*) (MNHN, Paris).

Fore wing with areole; length ♂ (9), 13·0–15·0, ♀ (10), 14·2–15·7. Wing pattern as in Pl. 4, figs 160, 161. Fore wing upper surface with ground colour brownish orange, costal margin and upper central longitudinal streak white. In a few specimens there is a white longitudinal streak between M_3–Cu_{1a}. When present, terminal and medial dots brown. Hind wing upper surface with proximal area either white or light brown; when white, the distal area is light brown; when light brown, the distal area is brown; marginal 'cilia' white.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 67. ♀ papilla analis simple.

MATERIAL EXAMINED.

MADAGASCAR: 1 ♂, 9 ♀; de Fianarantsae, 1 ♂, iii.1956 (*A. Robinson*), MNHN,

FIG. 67. *M. epimethea*, ♂, scobinate bar and cornutus.

Paris (this specimen was collected with the holotype but did not form part of the type-series—communication by Dr P. Viette); Mananjary, 7 ♂, 1 ♀, 1918 (*G. Melou*).

DISTRIBUTION. Madagascar.

REMARKS. Separation of *epimethea* from other species in the *radiata*-group involves a number of structural characters. The simple form of the papilla analis in *epimethea* separates it from *flavistrigata, radiata, roseivena* and *rosacea*; in the latter four, the papilla analis is modified. Non-overlapping scobinate bar spicules in *epimethea* separate it from *beatrix*, in which the spicules overlap; and the presence of an areole in *epimethea* distinguishes it from *rubristria*.

Masalia rosacea Hampson

(Text-figs 68, 69; Pl. 6, figs 179, 180)

Masalia rosacea Hampson, 1891 : 71. LECTOTYPE ♂, INDIA (BMNH), here designated [examined].

[*Pradatta beatrix* Moore; Hampson, 1903 : 114. *M. rosacea* considered to be an aberration of *P. beatrix* Moore.]

Timora rosacea (Hampson) Warren, 1913 : 315. [Reinstated as valid name.]

Fore wing with areole; length ♂ (7), 13·4 (lectotype)–15·9, ♀ (2), 16·1–16·5. Wing pattern as in Pl. 6, figs 179, 180. Fore wing upper surface with ground colour pale to pastel-red, upper central longitudinal streak white to yellowish white. Hind wing upper surface reddish golden brownish orange.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 69. ♀ papilla analis modified, terminal spines present (Text-fig. 68).

MATERIAL EXAMINED.

LECTOTYPE, here designated, [INDIA: Madras,] Nilgiris, ♂ (*Hampson*); paralectotypes, [INDIA: Madras,] Nilgiris, 3 ♂ (*Hampson*).

INDIA: Kerala, 1 ♂ (*Place*); K., Peermade, 1 ♂, 1 ♀ (*Imray*); Madras, Nilgiris, 1 ♂, 7.ix.1903 (*Hampson*); ?, Seven Valley, 1 ♀.

DISTRIBUTION. Southern India.

REMARKS. Within the *radiata*-group *rosacea* is separable from all but *roseivena* on features of the papilla analis. The modified form of the papilla analis in *rosacea* separates it from *beatrix, epimethea* and *rubristria* (simple in these three); and the presence of terminal spines separates it from *flavistrigata* and *radiata*; in *flavistrigata* and *radiata*, terminal spines are absent. *M. rosacea* is distinguishable from *roseivena* on the difference in the upper surface hind wing colour, reddish golden brownish orange in *rosacea*, white either immaculate or lightly suffused with reddish brown in *roseivena*.

Masalia roseivena (Walker) comb. n.

(Text-figs. 70, 71; Pl. 6, figs 181–184)

Leucania roseivena Walker, 1866 : 1954. Holotype ♂, Flores (UM, Oxford) [examined].
Timora roseivena (Walker) Warren, 1913 : 314.
Leucania alarioides Butler, 1886 : 392. Lectotype ♂, Australia (BMNH) [examined.] [Synonymized by Warren, 1913 : 314.]
Timora alarioides (Butler) Hampson, 1903 : 111. [Lectotype designated.]

Fore wing with areole present; length ♂ (8), 12·2–14·8 (holotype), ♀ (10), 13·9–15·4. Wing pattern as in Pl. 6, figs 181–184. Fore wing upper surface with costal and anal regions pink, central region white; lower central longitudinal streak pink, either immaculate or suffused with reddish brown. Hind wing upper surface white, immaculate or lightly suffused with reddish brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 71. ♀ papilla analis modified, terminal spines present (Text-fig. 70).

Material examined.

Leucania roseivena, holotype, Flores: ♂ (*Wallace*), in UM Oxford; *Leucania*

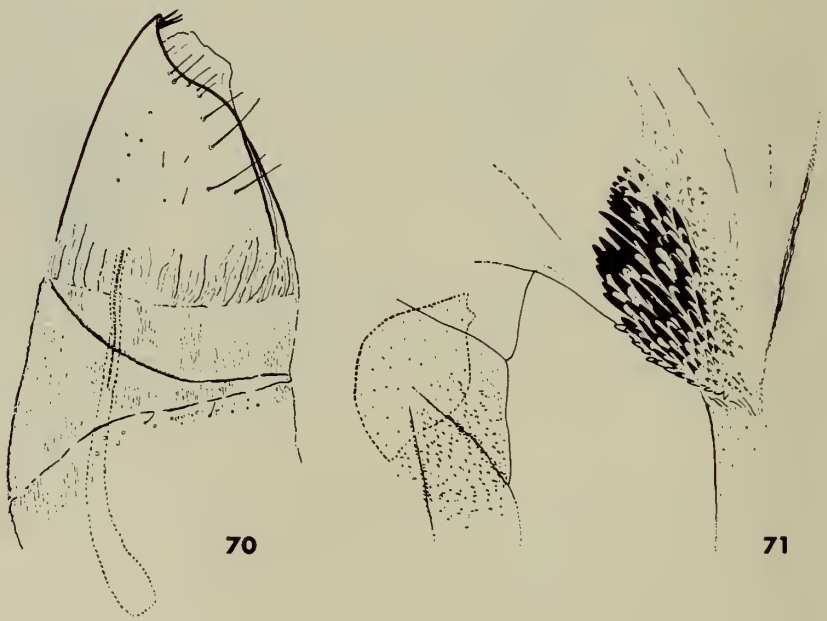
Figs 68–69. *M. rosacea*, genitalia. 68, ♀, papilla analis. 69, ♂, scobinate bar and cornutus.

alarioides, lectotype [AUSTRALIA:] Queensland, Peak Downs, ♂; paralectotype [AUSTRALIA: Queensland,] Gayndah, ♂.

LOMBOK: Pringabaja, 1 ♀, iv.1896 (*H. Frashstorfer*); AUSTRALIA: Northern Territories, Darwin, 2 ♀ (*J. S. Litchfield*); Eureke, 2 ♂, 4 ♀, ii.1903 (*Tunney*); Queensland, Geraldtown, near Cairns, 1 ♂ (*Meek*); Mareeba, 1 ♂, 25.xii.1961 (*H. Demarz*), in ZSBS, Munich; Peak Downs, 1 ♂; Townsville, 1 ♀ (*Dodd*); [?,] 2 ♀ (*Barnard*).

DISTRIBUTION. Lombok, Flores and Australia.

REMARKS. Apart from *rosacea*, *roseivena* can be separated from all other species in the *radiata*-group on characters of the female genitalia, the modified form of the papilla analis and presence of terminal spines. In *beatrix*, *epimethea* and *rubristria* the papilla anali are simple in form; *flavistrigata* and *radiata* both have modified papilla anali but terminal spines are absent. *M. roseivena* is distinguishable from *rosacea* on the colour difference of the hind wing upper surface: white, either immaculate or lightly suffused with reddish brown in *roseivena*, reddish golden brownish orange in *rosacea*.



FIGS 70–71. *M. roseivena*, genitalia. 70, ♀, papilla analis. 71, ♂, scobinate bar and cornutus.

Masalia flavistrigata (Hampson) **comb. n.**

(Text-figs 72, 73; Pl. 7, figs 186–188)

Timora flavistrigata Hampson, 1903 : 114. Holotype ♂, KENYA (BMNH) [examined].
Timora lineata de Joannis, 1910 : 224. LECTOTYPE ♂, GUINEA (MNHN, Paris), here designated [examined]. **Syn. n.**

Prothoracic tibia with outer claw short or absent. Fore wing with areole; length ♂ (168) 11·4–16·5 (lectotype 13·4), ♀ (29), 12·4–18·2. Wing pattern as in Pl. 7, figs 186–188. Fore wing upper surface with ground colour ranging from pale to greyish orange, or pastel-red through brownish orange to dull red. Upper central longitudinal streak, when present, yellowish white. Anal region immaculate or lightly suffused with greyish brown. Hind wing upper surface white to yellowish white.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 73. ♀ papilla analis modified, dorsolateral surface clothed in fine hair, terminal spines absent (Text-fig. 72).

MATERIAL EXAMINED.

Timora flavistrigata, holotype [KENYA:] Nairobi Plains, Kikuyu, ♂ (*R. Crawshay*). *Timora lineata*, LECTOTYPE, here designated, [GUINEA] H. Guinea: Siguiri, Oudoula, ♂, in MNHN, Paris.

72

73

FIGS 72–73. *M. flavistrigata*, genitalia. 72, ♀, papilla analis. 73, ♂, scobinate bar and cornutus.

Ghana: Northern Territories, Kete-Krachi, 9 ♂, 6 ♀ (*A. W. Cardinall*); Nigeria: Minna, 1 ♀, 6.x.1910 (*Scott-Macfie*); Central African Republic: Fort Crampel, 1 ♂ (*LeMoult*); Angola: Luimbale, Mt. Moco, 1800–1900 m, 122 ♂, 14 ♀, 15–24.iii. 1934 (*K. Jordan*); Lunda, Xa-Sengue, 2 ♂, 9.iv.1937 (*M. A. Exwell*); Quicolungo, 120 km north of Lucala, 2 ♂, iv.1936 (*R. Braun*); Ethiopia: Harar, 1 ♂, viii.1939 (*R. E. Ellison*); Uganda: Mulema, 2 ♂, 1 ♀, v.1903 (*W. L. Doggett*); S. E. Ruwenzori, 3500 ft, 1 ♂, 16.iv.1906 (*G. Legge & A. E. R. Wollaston*); Kenya: Kitale, 14 ♂, 2 ♀, vi–vii.1934 (*G. W. Jeffery*); Lumba, 1 ♂, 2.iv.1923 (*G. W. Jeffery*); Mt. Elgon, 1 ♀, iv.1932 (*T. H. E. Jackson*); Tanzania: Dodoma, 1 ♀, iii.1950 (*N. Mitton*); Marungu Plateau, 7000 ft, 1 ♂, ii.1922 (*T. A. Barns*); Malawi: Mt. Mlanje, 1 ♂, 24.iv.1923 (*S. A. Neave*); Zambia: Abercorn, 1 ♂, ii.iii.1954 (*D. Vesey-Fitzgerald*).

Distribution. Guinea, Ghana, Nigeria, Central African Republic, Angola, Ethiopia, Uganda, Kenya, Tanzania, Malawi, Zambia, South Africa.

Remarks. Within the *radiata*-group *flavistrigata* can be separated from all but *radiata* on differences in the female genitalia. The modified papilla analis in *flavistrigata* separates it from *beatrix*, *epimethea* and *rubristria*, in which the papilla analis is simple; the absence of terminal spines in *flavistrigata* separates it from *roseivena* and *rosacea*, both of which possess terminal spines. Although the relationship between *flavistrigata* and *radiata* is probably no closer than their relationship to any other species in the group, no single character has been found to separate *flavistrigata* from *radiata*. The white upper surface of the hind wing and the overlapping scobinate bar spicules in *flavistrigata* can, however, be used to separate *flavistriata* from each of the subspecies of *radiata*: in *M. r. radiata* the upper surface hind wing colour is brown, and in *M. r. terracotta* the scobinate bar spicules do not overlap.

THE *LATINIGRA–CHEESMANAE* COMPLEX

Affinities with other species in the genus are not particularly close. *M. latinigra* and *M. cheesmanae* can be separated from all but one other species, *M. flavistrigata*, by the presence of a single prothoracic claw; *latinigra* and *cheesmanae* are separable from *flavistrigata* by the more rounded fore wing apex (Text-figs 23 *flavistrigata*, 75) and the more elongate scobinate bar (Text-figs 73 *flavistrigata*, 73, 78, 80, 81).

Two closely related species are recognized, each with two subspecies. The species can be separated on differences in the male antennal segments, lamellate in *latinigra*, simple in *cheesmanae*. On colour and pattern the nominate subspecies are readily distinguished from one another but differences between subspecies *M. latinigra dangilensis* and *M. cheesmanae tamburensis* are less marked.

Masalia latinigra (Hampson) **comb. n.**

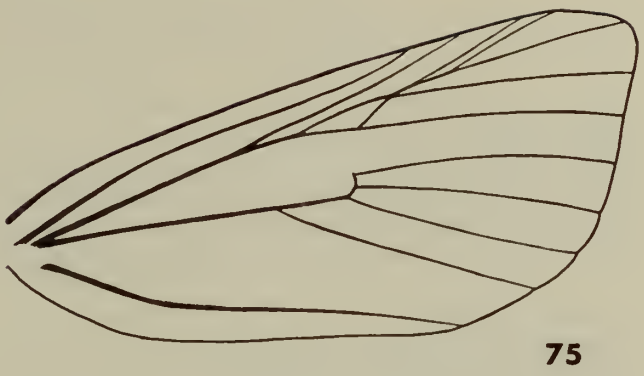
(Text-figs 74–78; Pl. 7, figs 189–191; Map 8)

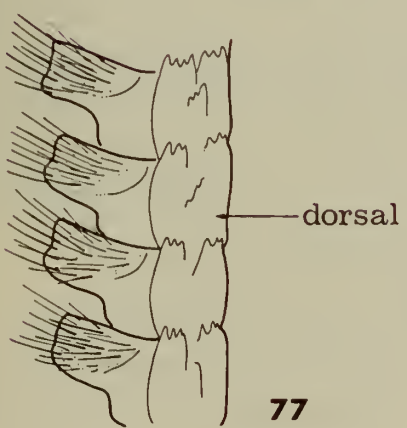
Timora latinigra Hampson, 1907 : 243.

Antennal flagellar segments show marked sexual dimorphism: ♂ segments lamellate (atypical for genus), ♀ segments simple (Text-figs 76, 77). Prothoracic tibia with one inner claw (Text-fig. 74). Fore wing with areole of large size (Text-fig. 75).

Genitalia, ♂ scobinate bar markedly elongate (Text-fig. 78). ♀ papilla analis simple.

The lamellate antennae of the male are diagnostic.





FIGS 74–78. *M. latinigra*. 74, prothoracic tibia. 75, fore wing venation. 76, ♀, antennal segments, lateral view. 77, ♂, antennal segments, lateral view. 78, *M. l. latinigra*, ♂, scobinate bar and cornutus.

Masalia latinigra latinigra (Hampson)

(Text-fig. 78; Pl. 7, figs 189, 190; Map 8)

Timora latinigra Hampson, 1907 : 243. LECTOTYPE ♂, Uganda (BMNH), here designated [examined].

Fore wing length ♂ (30), 12·9–15·8 (lectotype 14·1), ♀ (7), 13·2–15·3. Wing pattern as in Pl. 7, figs 189, 190. Fore wing upper surface with ground colour reddish yellow to light orange, lower central longitudinal streak, postmedial and terminal dots, dark brown to black. Hind wing upper surface yellowish white, finely to moderately irrorate with dark brown.

Material examined.

LECTOTYPE, here designated, Uganda, ♂ (*W. L. Doggett*); paralectotypes, Uganda, 16 ♂, 4 ♀ (*W. L. Doggett*).

Uganda: Ankole, 2 ♂, 29.iii.–26.ix.1929 (*J. Gastrell*); Elburgin Railway Station, 2 ♂, 2.vii.1903; Uganda-Kenya: Mt. Elgon, 1 ♂, v.1934 (*T. H. E. Jackson*); Kenya:

Map 8. Distribution of species and subspecies of the *latinigra-cheesmanae* complex.

Kitali, 3 ♂, 1 ♀, 9–24.iv.1927; Nakuru, 1 ♀, 16.iv.1941; 3 ♂, 2 ♀, 5–22.iv.1942; 1 ♂, 11.v.1952; 1 ♀, 5.v.1954 (Nakuru specimens, *A. Townsend*).

DISTRIBUTION (Map 8). Uganda and Kenya.

REMARKS. The nominate subspecies is characterized by a well developed, broad, dark brown to black, lower central longitudinal streak; absent or poorly differentiated in *M. l. dangilensis*.

Masalia latinigra dangilensis subsp. n.

(Pl. 7, fig. 191; Map 8)

Fore wing length ♂ (15), 13·0–14·8 (holotype 13·8). Wing pattern as in Pl. 7, fig. 191. Fore wing upper surface with ground colour brownish orange, postmedial and terminal dots brown to dark brown; a brown, indistinctly differentiated, lower central longitudinal streak may be present. Hind wing upper surface brown.

MATERIAL EXAMINED.

Holotype, ETHIOPIA: Dangila, 40 mls S. of Lake Tana, 6700 ft, ♂, 31.viii.1926 (*R. E. Cheesman*).

Paratypes. ETHIOPIA: Dangila, 6700 ft, 14 ♂, 14–29.viii.1926 (*R. E. Cheesman*).

DISTRIBUTION (Map 8). Ethiopia.

REMARKS. The absence of a lower central longitudinal streak (or at the most the presence of a poorly differentiated one) distinguishes *M. l. dangilensis* from *M. l. latinigra*.

Masalia cheesmanae sp. n.

(Text-figs 79–81; Pl. 7, figs 192–194; Map 8)

Antenna with ♂ and ♀ flagellar segments simple. Prothoracic tibia with one inner modified spine. Fore wing with areole.

M. cheesmanae can be separated from *M. latinigra* on the difference in the male antennal segments, simple in *M. cheesmanae* (Text-fig. 79), lamellate in *M. latinigra* (Text-fig. 77).

This species is named after the late Miss L. Evelyn Cheesman, who collected much insect material for the BMNH.

Masalia cheesmanae cheesmanae subsp. n.

(Text-fig. 80; Pl. 7, figs 192, 193; Map 8)

Fore wing length ♂ (5), 12·2–14·4 (holotype 14·3). Wing pattern as in Pl. 7, figs 192–193. Fore wing upper surface with ground colour orange, costa white, markings brown. Hind wing upper surface yellowish white.

Genitalia. ♂ scobinate bar as in Text-fig. 80.

MATERIAL EXAMINED.

Holotype, [CONGO (KINSHASA):] Upper Uelle District, Dungu, ♂, v.

Paratypes. SENEGAL: St. Louis, 1 ♂, iii.1932, in MNHN, Paris; CAMEROUN:

Genderu Mountains, 2600 ft, 1 ♀, ix.1921; [Congo (Kinshasa):] Upper Uelle District, Dungu, 2 ♂, ix.

Distribution (Map 8). Senegal, Cameroun and Congo (Kinshasa).

Remarks. *M. c. cheesmanae* can be separated from *M. c. tamburensis* on the difference in upper surface hind wing colour, yellowish white in *M. c. cheesmanae*, brownish orange in *M. c. tamburensis*.

Masalia cheesmanae tamburensis subsp. n.

(Text-fig. 81; Pl. 7, fig. 194; Map 8)

Fore wing length, ♂ (1), 14·3 (holotype). Wing pattern as in Pl. 7, fig. 194. Fore wing upper surface with ground colour light orange, costa white, markings brown. Hind wing upper surface brownish orange.

Genitalia. ♂ scobinate bar as in Text-fig. 81.

Material examined.

Holotype, Sudan: [Tambura] Tembura, ♂, viii [illegibly written].

Distribution (Map 8). Southern Sudan.

Remarks. *M. c. tamburensis* can be separated from the nominate subspecies on the difference in colour of the upper surface of the hind wing, brownish orange in *M. c. tamburensis*, yellowish white in *M. c. cheesmanae*.

Masalia uncta (Swinhoe) comb. n.

(Text-fig. 82; Pl. 7, fig. 195)

Adisura uncta Swinhoe, 1885 : 449. LECTOTYPE ♂, India (BMNH) [examined].
Timora uncta (Swinhoe) Hampson, 1903 : 109.

The species is known only from male specimens, and of the two referred to by Hampson, only one, labelled type, remains.

Fore wing with areole absent; length ♂ (1), 12·7 (lectotype). Wing pattern as in Pl. 7, fig. 195. Fore wing upper surface with ground colour light yellow; postmedial streaks on veins M_1 to Cu_{1a} brown; marginal cilia pale red, tipped with white. Hind wing upper surface brownish orange to light brown, streaked distally with light yellow; marginal cilia pale yellow.

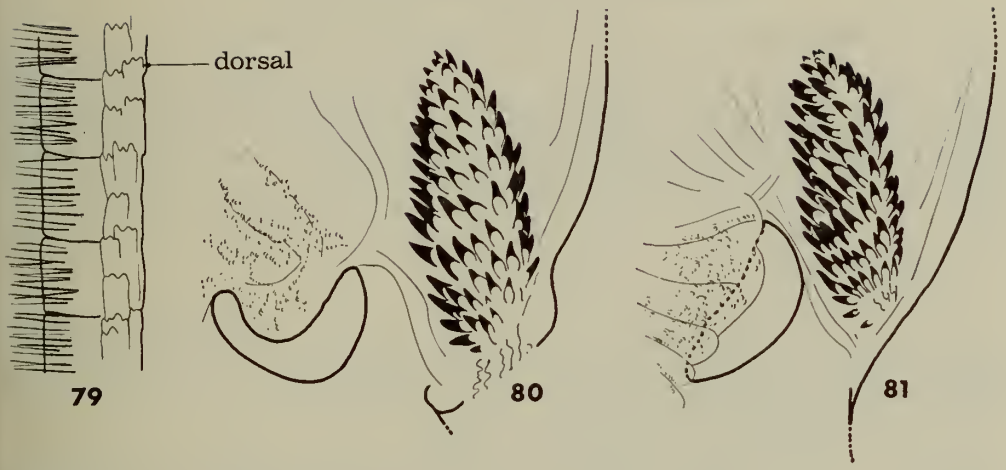
Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 82.

Material examined.

LECTOTYPE, here designated, [India: Maharashtra,] Bombay, ♂, x.1886 (*C. Swinhoe*).

Distribution. South-west India.

Remarks. The postmedial streaks against the light yellow ground of the fore wing, together with the absence of any other marking, distinguishes the species from others in the genus. On wing shape it is probably fairly closely allied to *M. albicilia*, and bears a marked resemblance to species within the genus *Adisura*.



FIGS 79–81. *M. cheesmanae*. 79, ♂, antennal segments, lateral view. 80, *M. c. cheesmanae*, ♂, scobinate bar and cornutus. 81, *M. c. tamburensis*, ♂, scobinate bar and cornutus.

FIG. 82. *M. uncta*, ♂, scobinate bar and cornutus.

Masalia albicilia (Hampson) **comb. n.**

(Text-fig. 83; Pl. 7, figs 196, 197)

Timora albicilia Hampson, 1903 : 115. Holotype ♂, Sikkim (BMNH) [examined].

Fore wing without areole; length ♂ (4), 11·8–12·2 (holotype 12·0), ♀ (2), 12·7–13·2. Wing pattern as in Pl. 7, figs 196, 197. Fore wing upper surface variable, light yellow suffused with brownish orange; outer margin brownish orange (Pl. 7, fig. 196), or brownish orange indistinctly marked with light yellow; outer margin brownish orange (Pl. 7, fig. 197). Marginal cilia white. Hind wing upper surface light brown, marginal cilia pale yellow.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 83. ♀ papilla analis simple.

Material examined.

Holotype, Sikkim: ♂, 3.x.1896 (*G. C. Dudgeon*).

India: West Bengal, Darjeeling, Gopaldhara, 1 ♂; W.B., Darjeeling, Gopaldhara, 4720 ft, 1 ♂, 1 ♀, ix.1916; W.B., Darjeeling, Gopaldhara, 1 ♂, 18.ix.1916 (all *H. Stevens*); W.B., Darjeeling, 1 ♀.

Distribution. North-east India and Sikkim.

Remarks. The brownish orange colouring and virtual absence of pattern from the fore wing upper surface, together with the light brown colouring of the hind wing, distinguishes this species from others in the genus.

Fig. 83. *M. albicilia*, ♂, scobinate bar and cornutus.

Masalia albipuncta (Hampson) **comb. n.**

(Text-figs 26, 84; Pl. 8, figs 198, 199)

Timora albipuncta Hampson, 1910 : 401. LECTOTYPE ♂, ZAMBIA (BMNH), here designated [examined].

Fore wing with areole; length (10) ♂, 11·2 (lectotype)–13·8, ♀ (5), 12·0–14·4. Wing pattern as in Pl. 8, figs 198, 199. Fore wing upper surface with ground colour pale to light yellow. Terminal dashes, proximal oblique-longitudinal dash (Text-fig. 26), and, when present orbicular and discocellular markings, reddish brown to brown. A white waved postmedial band outlined in reddish brown or brown may also be present. Hind wing upper surface white, distally suffused with pale yellow or pale yellow and light brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 84. ♀ papilla analis simple.

MATERIAL EXAMINED.

LECTOTYPE, here designated, [ZAMBIA] North East Rhodesia: Upper Luangwa Valley, 1600–2000 ft, ♂, 21.iii.1908 (*S. A. Neave*); paralectotype, [ZAMBIA] North East Rhodesia: Upper Luangwa Valley, 1600–2000 ft, ♀, 16.iii.1908.

TANZANIA: Shinyanga, 1 ♂, iii.1952; 1 ♂, xii.1956; 4 ♂, 3 ♀, i.1957; 1 ♂, xi.1957 (all *Croft*); Shinyanga, Mwandui, 2 ♂, 1 ♀, ii.–iii.1952 (*Croft*).

DISTRIBUTION. Tanzania and Zambia.

REMARKS. Apart from *M. quilengesi*, *M. albipuncta* is readily distinguished from other species in the genus on wing colour and pattern. *M. albipuncta*, which could be confused with *M. quilengesi*, can be distinguished by the presence of a proximal oblique-longitudinal dash on the fore wing upper surface.

FIG. 84. *M. albipuncta*, ♂, scobinate bar and cornutus.

Masalia quilengesi sp. n.

(Text-fig. 85; Pl. 8, figs 200–202)

Fore wing with areole; length ♂ (2), 11·3 (holotype)–12·5, ♀ (2), 11·8–12·9. Wing pattern as in Pl. 8, figs 200–202. Fore wing upper surface with ground colour light yellow suffused with pale or pastel-red. Terminal dashes, orbicular and discocellular markings brown, one, two or all three markings may be absent but when present from faint to well developed. A postmedial row of white dots, lightly differentiated, may also be present. Hind wing upper surface pale yellow. In a male specimen from Okahandja (Pl. 8, fig. 202), a distinct variant, the costa region is light yellow, central and anal regions greyish red and ante- and postmedial markings white.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 85. ♀ papilla analis simple.

Material examined.

Holotype, [Angola:] Benguella, Fort Quilenges, ♂, ii.1905 (*Ansorge*).

Paratypes. [Angola:] Benguella, Fort Quilenges, 2 ♀, i.ii.1905 (*Ansorge*); South West Africa: Okahandja, 1 ♂, 16.ii.1953 (*F. Gaerdes*), in ZSBS, Munich.

Distribution. Angola and South West Africa.

Remarks. *M. quilengesi* is most closely allied to *M. albipuncta*. The anal proximal, oblique-longitudinal dash found in *M. albipuncta* and absent in *M. quilengesi* distinguishes between them.

Fig. 85. *M. quilengesi*, ♂, scobinate bar and cornutus.

Masalia terracottoides (Rothschild) **comb. n.**

(Text-figs 86–88; Pl. 5, figs 171–173; Map 9)

Timora terracottoides Rothschild, 1921 : 160. Holotype ♂, NIGER (BMNH) [examined].
Timora fissa Aurivillius, 1925 : 13. Holotype ♂, SUDAN (NR, Stockholm) [examined]. **Syn. n.**

Fore wing with areole present; length ♂ (27), 12·8–16·7 (holotype 14·3), ♀ (20), 14·5–16·7. Wing pattern as in Pl. 5, figs 171–173. Fore wing upper surface with variable colouring; ground colour from pale orange, brownish or greyish orange, light brown to brown; costal margin, upper central, and anal longitudinal streaks, white; postmedial dots, when present, brown, terminal dots white, distally tipped with brown. Hind wing upper surface white, immaculate or suffused with brown.

FIGS 86–88. *M. terracottoides* genitalia. 86, ♀, papilla analis.
87 and 88, ♂, scobinate bar and cornutus.

Genitalia. ♂ scobinate bar and cornutus as in Text-figs 87, 88. ♀ papilla analis modified, laterally flattened, with a spiculate surface (striate appearance) (Text-fig. 86).

MATERIAL EXAMINED.

Timora terracottoides, holotype, [NIGER:] N. Damagarim, Kaleloua, ♂, 8.ix.1920 (*A. Buchanan*); paratypes, [NIGER:] Damagarim, Baban Tubki, south of Zinder, 2 ♂, 1 ♀, 13.ix.1920; Bande, 2 ♂, 2 ♀, 16.ix.1920; Kaleloua, 5 ♂, 9 ♀, 8.ix.1920; Makochia, 4 ♂, 3 ♀, 15.ix.1920; Songo, 1 ♀, 17.ix.1920 (all coll. *A. Buchanan*). *Timora fissa*, holotype, SUDAN: [Renk,] ♂, (*Pr. W. Exp. Gyld*), in NR, Stockholm.

SENEGAL: Dakar, Aeroport, 1 ♂, 9.ix.1948, in ZSBS, Munich; 1 ♂, 10.ix.1956 (*C. Rungs*), in MNHN, Paris; Kaolack, 2 ♂, 1 ♀, 1909 (*G. Melou*); Senegambia, 2 ♂, x.1907 (*Riggenbach*); GAMBIA: 1 ♂ (*A. Moloney*).

DISTRIBUTION (Map 9). Senegal, Gambia, Niger, Angola and Sudan.

REMARKS. Except for *nubila*, *terracottoides* can be separated from all other species in the genus on the flattened form and spiculate surface of the papilla analis; *nubila* differs from *terracottoides* in the absence of fore wing upper central and anal, longitudinal white streaks.

MAP 9. Distribution of *M. terracottoides*.

Masalia nubila (Hampson) **comb. n.**

(Text-figs 89–90; Pl. 8, figs 203, 204, 205)

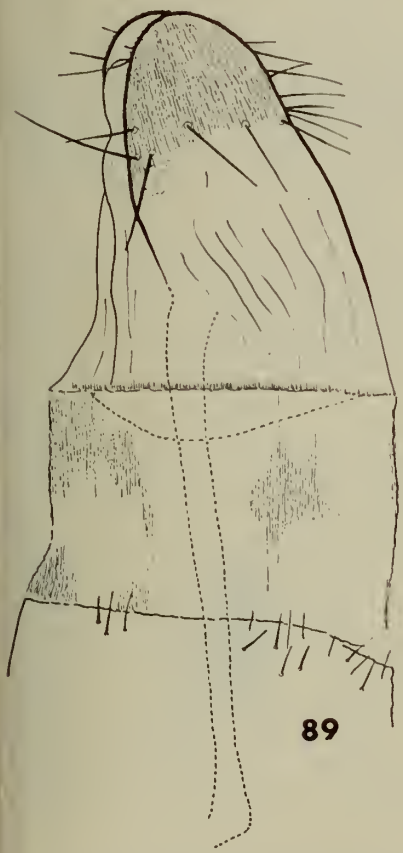
Timora nubila Hampson, 1903 : 108. Holotype ♀, Nigeria (BMNH) [examined].
Timora chrysita de Joannis, 1910 : 225. LECTOTYPE ♀, Guinea (MNHN, Paris), here designated [examined]. **Syn. n.**

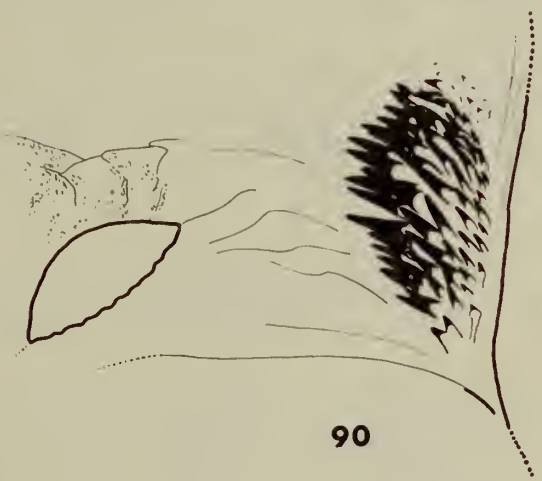
Fore wing with areole; length ♂ (4), 12·6–13·0, ♀ (4), 13·4–15·0 (holotype). Wing pattern as in Pl. 8, figs 203–205. Fore wing upper surface with ground colour light yellow to light orange, markings light brown to brown. Hind wing upper surface yellowish white, greyish orange or reddish golden brownish orange.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 90. ♀ papilla analis simple; surface spiculate (striate appearance) (Text-fig. 89).

Material examined.

Timora nubila, holotype [Nigeria:] River Niger between Akassa and Asaba, ♀





Figs 89–90. *M. nubila* genitalia. 89, ♀, papilla analis. 90, ♂, scobinate bar and cornutus.

(*F. D. Lugard*). *Timora chrysita*, LECTOTYPE, here designated. [GUINEA] Haute Guinea; Dioudougou, ♀ (*L.& J. de Joannis*), in MNHN, Paris.

SENEGAL: 1 ♂, 6.x.1966, in MNHN, Paris; N'Danoe, 1 ♂, 26.viii.1951 (*B. Boniface*), in MNHN, Paris; GAMBIA: 1 ♀ (*G. Moloney*); GHANA: Northern Territories, Kete-Krachi, 2 ♂, 1 ♀, (*A. W. Cardinall*).

DISTRIBUTION. Senegal, Guinea, Ghana and Nigeria.

REMARKS. This species is closely related to *dora*; the two can be distinguished on differences in the papilla analis, simple in *nubila*, modified in *dora*. It must, however, be noted that this difference is based on a single specimen of *dora* of which the abdomen has been re-attached, apparently correctly matched.

Masalia dora Swinhoe

(Text-figs 91, 92; Pl. 8, figs 206–207)

Masalia dora Swinhoe, 1891 : 147. LECTOTYPE ♂, INDIA (BMNH), here designated [examined].
Timora dora (Swinhoe) Hampson, 1903 : 104.

Fore wing with areole; length ♂ (1), 12·5 (lectotype), ♀ (1), 15·7. Wing pattern as in Pl. 8, figs 206–207. Fore wing upper surface with ground-colour orange to greyish orange, marked with brownish orange. Hind wing upper surface white.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 92. ♀ papilla analis modified (Text-fig. 91).

FIGS 91–92. *M. dora* genitalia. 91, ♀, papilla analis. 92, ♂, scobinate bar and cornutus.

MATERIAL EXAMINED.

LECTOTYPE, here designated, [INDIA: Maharashtra,] Khandala, ♂, x.1886 (*C. Swinhoe*); paralectotype, [INDIA: Maharashtra,] Khandala, 1 ♀ (*C. Swinhoe*).

DISTRIBUTION. India.

REMARKS. On pattern and colour *dora* appears closely allied to the African *nubila*. The striking differences between the papilla analis, modified in *dora*, simple in *nubila*, affords a ready means of identification. Unfortunately this difference is based on a single specimen of *dora* with a re-attached abdomen, though appearing correctly matched. Resemblance in other features is close but on the basis of limited available material, it is thought that the two names should retain their separate specific status.

Masalia semifusca sp. n.

(Pl. 6, fig. 185)

Timora dora (Swinhoe) aberration 1, Hampson, 1903 : 104.
Timora dora ab. *semifusca* Warren, 1913 : 313. Holotype ♀, INDIA (BMNH) [examined].
Timora dora ab. *belgaumensis* Strand, 1916 : 143. Holotype as above. [Objective synonym of *semifusca*].

This species is known only from the female type.

Fore wing with areole; length ♀ (1), 15·7 (holotype). Wing pattern (Pl. 6, fig. 185). Fore wing upper surface colouring between light and greyish orange, almost unicolorous, though anal regions and scaling along the medial and radial veins is of slightly darker tone (greyish orange). Hind wing upper surface yellowish white, proximal area suffused with light brown. The specimen is slightly rubbed and probably faded.

Genitalia. ♀ papilla analis simple.

MATERIAL EXAMINED.

Holotype, [INDIA:] Mysore, Belgaum, ♀, ix.1896 (*Watson*), (Hampson ab. 1; ab. *semifusca* Warren holotype; ab. *belgaumensis* Strand holotype).

DISTRIBUTION. South-west India.

REMARKS. The relationship of *semifusca* to other species within the genus is uncertain and, with the absence of male material, its inclusion in *Masalia* is tentative. It is not thought to be conspecific with *dora*, as was first stated by Hampson (1903), nor is it thought to be closely allied, though some doubt must remain. For, although the papilla anali differ, simple in *semifusca*, modified in *dora*, the comparison is based on only two specimens of which one, the paralectotype of *dora*, possesses a re-attached abdomen. There is also the apparent absence of pattern from these two female specimens, but on what remains of a pattern in *semifusca* there is little to indicate close affinity. Apart from this, *semifusca* differs in fore wing shape and in possessing brown suffusion on the hind wing upper surface.

The name *semifusca* was the first to be given to this unique specimen, and is therefore regarded here as the valid name.

Masalia tosta Moore

(Text-figs 93, 94; Pl. 8, figs 208, 209)

Masalia tosta Moore, 1881 : 411. Lectotype ♀, India (BMNH) [examined].
Timora tosta (Moore) Hampson, 1903 : 115. [Lectotype designated.]

Fore wing with areole; length ♂ (1), 14·7, ♀ (5), 13·6–16·8 (lectotype). Wing pattern as in Pl. 8, figs 208, 209. Fore wing upper surface with ground colour light, greyish, or brownish orange; upper central longitudinal streak, when present, yellowish white; marginal cilia, proximally brownish orange, distally white, the well defined line between the colours giving the outer margin a banded appearance. Hind wing upper surface white, yellowish white or greyish yellow, either immaculate or marginally suffused with light orange.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 94. ♀ papilla analis simple (Text-fig. 93).

Material examined.

Lectotype, [India: Himachal Pradesh,] Dharmsala, ♀ (*Hocking*).

India: Himachal Pradesh, Kangra, Kulu, 1 ♂, 1 ♀ (*G. Young*); H.P., Sultanpur, 3 ♂ (*G. Young*).

Distribution. India.

Remarks. This species can be distinguished by its colouring, particularly the contrasting outer bands of the marginal cilia and, in the female, by the triangular shape of the papilla analis.

Figs 93–94. *M. tosta* genitalia. 93, ♀, papilla analis. 94, ♂, scobinate bar and cornutus.

Masalia artaxoides (Moore) **comb. n.**

(Text-fig. 95; Pl. 10, fig. 231)

Pradatta artaxoides Moore, 1881 : 366. LECTOTYPE ♂, India (BMNH), here designated [examined].
Timora artaxoides (Moore) Hampson, 1903 : 116.

Fore wing with areole absent or rarely present; length ♂ (23), 11·9–13·7 (lectotype 13·2), ♀ (11), 12·6–17·0. Wing pattern as in Pl. 10, fig. 231. Fore wing upper surface with ground colour light yellow or occasionally greyish orange; marginal cilia light yellow. Hind wing upper surface light yellow, yellowish grey or brownish grey; marginal cilia light yellow.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 95. ♀ papilla analis simple.

Material examined.

LECTOTYPE, here designated, [India:] North West Himalaya, ♂; paralectotypes, [India: Himachal Pradesh,] Dharmsala, 1 ♂ (*Hocking*); [H.P.,] Kula, 1 ♀ (*Hocking*); [Jammu & Kashmir] Kashmir, 1 ♂.

West Pakistan: Abbottabad, 3 ♂, 1 ♀, viii. (*Mujtaba*); India: Himachal Pradesh, Dalhousie, 1 ♀, v.1891 (*Harford*); H.P., Kangra, Kulu, 2 ♂, 1 ♀ (*A. Young*), 4 ♂

Fig. 95. *M. artaxoides*, ♂, scobinate bar and cornutus.

(*Hocking*), 1 ♀ (*Swinhoe*), 4 ♂, 4 ♀; H.P., Kangra, Sultanpur, 4 ♂ (*G. Young*); north-west India, 2 ♂, 1 ♀; Sikkim: 1 ♂ (*Elwes*).

Distribution. West Pakistan, north India and Sikkim.

Remarks. The colour and absence of pattern from the upper surface of fore and hind wings distinguishes *artaxoides* from all but four species in the genus, *metaphaea*, *mittoni*, *modesta*, and *semifusca*. *M. metaphaea* is of darker colour and, unlike *artaxoides*, the female has a modified papilla analis. *M. artaxoides* can be separated from *mittoni* and *modesta* on differences in the scobinate bar. The bar in *mittoni* and *modesta* is more convex and packed closely with upward of 40 spicules (Text-figs 97, 98, 99); in *artaxoides* the spicules are sparsely scattered, the number rarely exceeding 20 (Text-fig. 95). *M. artaxoides* differs from *semifusca* in fore wing shape and in hind wing marking.

Masalia metaphaea (Hampson) **comb. n.**

(Text-fig. 96; Pl. 10, fig. 232)

Timora metaphaea Hampson, 1903 : 115. Holotype ♀, India (BMNH) [examined].

The species is known only from female specimens.

Fore wing without areole; length ♀ (8), 13·0–15·1 (holotype 13·4). Wing pattern as in Pl. 10, fig. 232. Fore wing upper surface with brownish orange ground colour; anal region irrorate with brown; marginal cilia brownish orange. Hind wing upper surface brown, marginal cilia brownish orange.

Genitalia. ♀ papilla analis modified, terminal spines absent (Text-fig. 96).

Material examined.

Holotype, [India: Himachal Pradesh,] N. W. Himalaya, Mandi, 3–5000 ft, ♀, 1883 (*G. Young*).

West Pakistan: Baluchistan, 1 ♀; India: Himachal Pradesh, Mandi, 3–5000 ft, 3 ♀, 1883 (*G. Young*); Sikkim, 3 ♀ (*Elwes*).

Distribution. West Pakistan, north-east and north-west India, Sikkim.

Remarks. Upper surface fore and hind wing colouring and virtual absence of pattern (fore wing anal region irrorate with brown) distinguishes *metaphaea* from all other species in the genus.

Masalia mittoni (Pinhey) **comb. n.**

(Text-figs 97, 98; Pl. 10, fig. 233)

Timora mittoni Pinhey, 1956 : 13. LECTOTYPE ♂, Tanzania (BMNH), here designated [examined].

Fore wing with areole; length ♂ (18), 12·1–13·9 (lectotype 13·5), ♀ (14), 13·7–15·5. Wing pattern as in Pl. 10, fig. 233. Fore wing upper surface with ground colour from pale to light orange, light to moderately irrorate with brown; extent of irrorate area variable. Hind wing upper surface light brown to brown.

Genitalia. ♂ scobinate bar and cornutus as in Text-figs 97, 98. ♀ papilla analis simple.

MATERIAL EXAMINED.

LECTOTYPE, here designated, [TANZANIA] Tanganyika: Iringa, ♂, iii.1950 (*N. Mitton*); paralectotypes, [TANZANIA] Tanganyika: Iringa, 11 ♂, 14 ♀, iii.1950 (*N. Mitton*).

TANZANIA: Iringa, 6 ♂, iii.1950 (*N. Mitton*).

DISTRIBUTION. Tanzania.

REMARKS. The fore and hind wing colouring of the upper surface, and absence of a definite pattern, distinguish *mittoni* from all but two other species in the genus, *metaphaea* and *artaxoides*. *M. metaphaea* is of darker colouring and, unlike *mittoni*, the female has a modified papilla analis. *M. artaxoides* and *mittoni* can be separated on differences in the scobinate bar. The bar in *mittoni* is more convex and closely packed with upward of 40 spicules (Text-figs 97, 98); in *artaxoides* the spicules are sparsely scattered and rarely exceed 20 in number (Text-fig. 95).

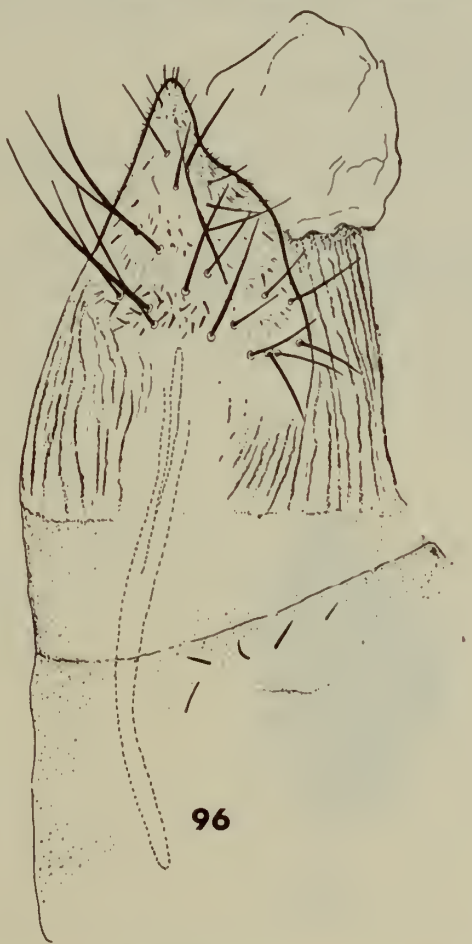


FIG. 96. *M. metaphaea*, ♀, papilla analis.

Masalia modesta (Moore) **comb. n.**

(Text-fig. 99; Pl. 10, fig. 234)

Pradatta modesta Moore, 1881 : 366. LECTOTYPE ♀ India (BMNH) here designated [examined].
Timora modesta (Moore) Hampson, 1903 : 116.
Curubasa calamaria Moore, 1881 : 367. LECTOTYPE ♂, India (BMNH), here designated [examined]. [Synonymized by Hampson 1903 : 116.]

Fore wing with areole; length ♂ (3), 12·0–12·3, ♀ (1), 11·0 (lectotype). Wing pattern as in Pl. 10, fig. 234. Fore wing upper surface pale yellow. Hind wing upper surface pale yellow. Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 99. ♀ papilla analis simple.

Material examined.

Pradatta modesta, LECTOTYPE, here designated, India: [Uttar Pradesh, Mainpuri] Manpuri, ♀; *Curubasa calamaria*, LECTOTYPE, here designated, [India: Maharashtra,] Bombay, ♂.

India: Madhya Pradesh, Jubbulpore, 2 ♂.

Distribution. India.

Remarks. The four specimens in the collection of the British Museum (Natural History) appear faded. In one specimen the fore wing upper surface has traces of pale red on the costal and anal regions.

The colour and virtual absence of pattern from the upper surface of the fore and hind wings separate *modesta* from all but one other species in the genus, *artaxoides*. *M. modesta* and *artaxoides* can be separated on differences in the scobinate bar. The bar in *modesta* is more convex and closely packed with upward of 40 spicules (Text-fig. 99); in *artaxoides* the spicules are sparsely scattered and rarely exceed 20 in number (Text-fig. 95).

Figs 97–98. *M. mittoni*, ♂, scobinate bar and cornutus.

Masalia bimaculata (Moore) comb. n.

(Text-figs 100–109; Pl. 9, figs 210–221; Map 10)

Pradatta bimaculata Moore, 1888 : 411.

M. bimaculata is a variable species, in size, extent of pattern differentiation and colour. A combination of two characters, (1) the presence of a brown discocellular spot, occasionally faint but rarely indistinguishable against the surrounding colour, and (2) the modified form of the papilla analis devoid of terminal spines, separates *M. bimaculata* from other species in *Masalia*.

Four subspecies are recognized, the structural differences being as follows:

	Areole	Cornutus	Distribution
M. b. bimaculata	present	present	Indian
M. b. cornia	absent	present	African
M. b. nigrifasciata	present or absent	present	African
M. b. pluritelifora	absent	absent	African

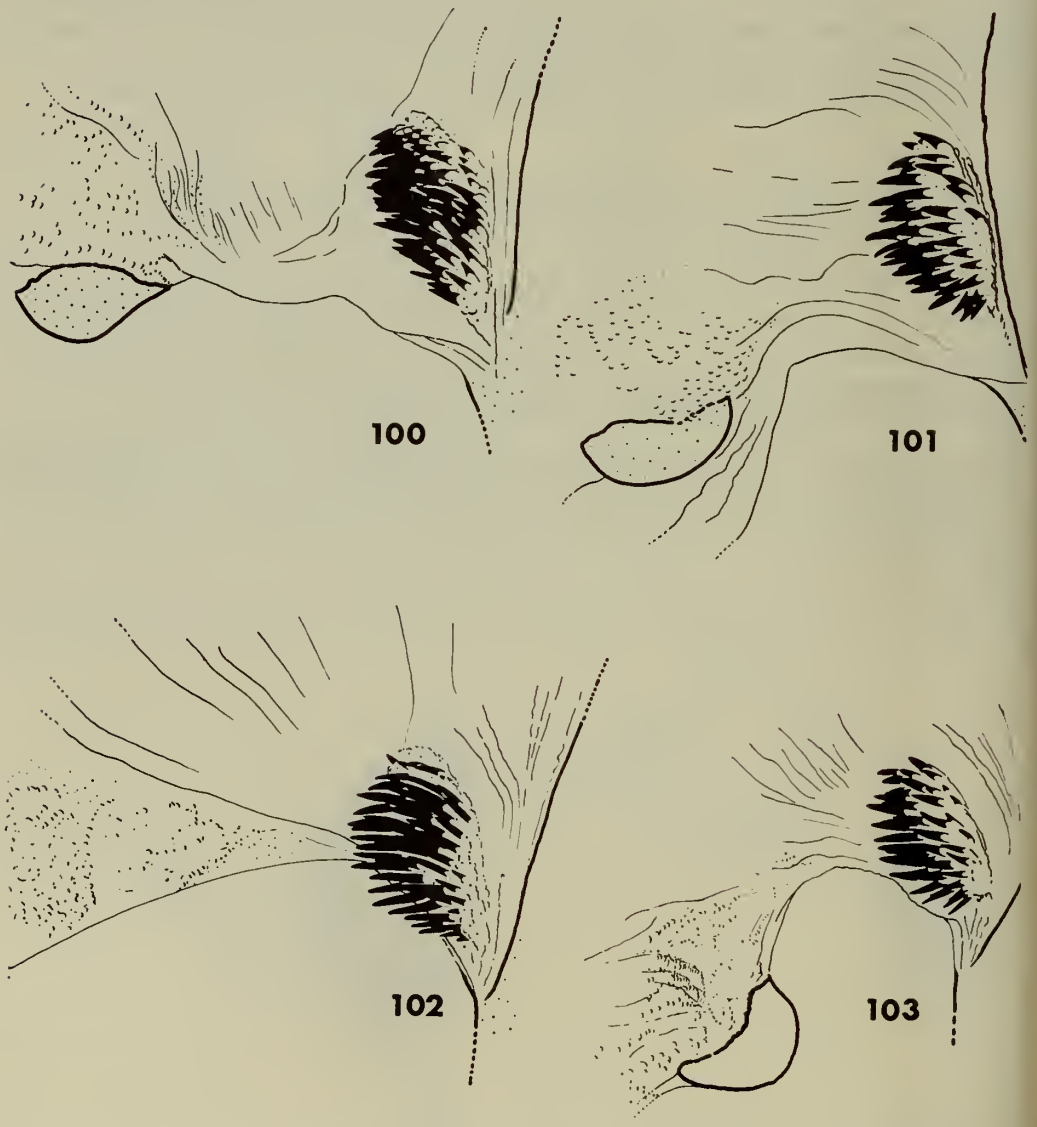
Though variation in colour and marking occurs between the four, pattern differences are not marked and are further obscured by variation within, and slight overlap between, them. *M. b. nigrifasciata*, linking with *M. b. bimaculata* and *M. b. cornia* on presence and absence, respectively, of an areole is, on colour and marking, the most readily distinguished. These differences are set out below.

M. b. nigrifasciata. Costal and anal regions typically dull red, central region yellowish white to light yellow; dark brown lower central longitudinal streak well developed.

FIG. 99. *M. modesta*, ♂, scobinate bar and cornutus.

M. b. bimaculata. Costal, central and anal regions white to pale yellow; brown lower central longitudinal streak absent or present.

M. b. cornia. Costal, central and anal region from pale yellow to reddish grey; dark brown lower central longitudinal streak present or absent. Or, costal and anal regions reddish white, with a poorly developed brown lower central longitudinal streak.



FIGS 100–103. *M. bimaculata* subspecies, scobinate bar and cornutus of male genitalia. 100, *bimaculata bimaculata.* 101, *bimaculata nigrifasciata.* 102, *bimaculata pluritelifora.* 103, *bimaculata cornia.*

M. b. pluritelifora. Costal, central and anal regions greyish orange to reddish grey irrorate with brown; a white upper central longitudinal streak usually present; brown lower central longitudinal streak poorly developed or absent.

Masalia bimaculata bimaculata (Moore)

(Text-figs 100, 104; Pl. 9, figs 210, 211; Map 10)

Pradatta bimaculata Moore, 1888 : 411. Holotype ♂, India (BMNH) [examined].
Timora bimaculata (Moore) Hampson, 1903 : 109.
Pradatta pallescens Hampson, 1891 : 70. LECTOTYPE ♂, India (BMNH), here designated [examined]. [Synonymized by Hampson, 1903 : 109.]
Pradatta pulverulenta Hampson, 1891 : 71. Holotype ♂, India (BMNH) [examined]. [Synonymized by Hampson (stated to be an aberration), 1903 : 109.]

Fore wing with areole; length ♂ (11), 10·4 (holotype)–14·6, ♀ (5), 13·2–15·5. Wing pattern as in Pl. 9, figs 210, 211. Fore wing upper surface with ground colour yellowish white to pale yellow, immaculate or finely irrorate with brown. Lower central longitudinal streak (when present) and discocellular spot, brown. Hind wing upper surface white to yellowish white.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 100. ♀ papilla analis modified, terminal spines absent, dorso-lateral surface sericate (Text-fig. 104).

Material examined.

Pradatta bimaculata, holotype, [India: Himachal Pradesh,] Dharmsala, ♂ (*J.H.Hocking*). *Pradatta pallescens*, LECTOTYPE, here designated, [India: Madras,] Nilgiris, ♂, (*Hampson*); paralectotypes, [India: Madras,] Nilgiris, 3 ♂ (*Hampson*). *Pradatta pulverulenta*, holotype, [India: Madras,] Nilgiris, ♂ (*Hampson*).

India: Himachal Pradesh, Kangra Valley, 4500 ft, 1 ♂, ix.1899 (*Dudgeon*); H.P., Sultanpur, Kulu, 1 ♂; H.P., Sultanpur, Kulu, 1 ♀, 1889 (*G. Young*); Kerala, Peermade, 1 ♀ (*Imray*); K., Travancore Place, 1 ♂, 1 ♀; Madras, Nilgiris, 1 ♂, 1 ♀; M., Nilgiris, 1 ♂ (*Hampson*); Madhya Pradesh, Mhow, 1 ♀.

Distribution (Map 10). India.

Remarks. The nominate subspecies and *M. b. nigrifasciata* are distinguishable on differences in colouring of the costal and anal regions, and the presence of the areole in *M. b. bimaculata* distinguishes it from *M. b. cornia* and *M. b. pluritelifora*, in which areoles are absent.

Masalia bimaculata nigrifasciata (Hampson) **comb. et stat. n.**

(Text-figs 101, 108, 109; Pl. 9, figs 216–219; Map 10)

Timora nigrifasciata Hampson, 1903 : 110. LECTOTYPE ♂, Kenya (BMNH), here designated [examined].
Timora bimaculata var. *unifasciata* Gaede, 1915 : 39. Holotype ♂, Tanzania (MNHU, Berlin) [examined]. [Synonymized with *Timora pulverulenta* Hampson by Gaede, 1935 : 106.] **Syn. n.**

Fore wing with or without areole; length ♂ (83), 13·0–16·5 (lectotype 15·8), ♀ (42), 14·9–18·1. Wing pattern as in Pl. 9, figs 216–219. Fore wing upper surface with costal and anal regions pale to dull red; central region yellowish white to light yellow occasionally with pale to dull red extending in from the costal and anal regions. In a number of specimens the regions are finely irrorate with dark brown; lower central longitudinal streak and discocellular spot also dark brown. Hind wing upper surface yellowish white to pale yellow.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 101. ♀ papilla analis modified, terminal spines absent, dorso-lateral surface sericate (Text-figs 108, 109).

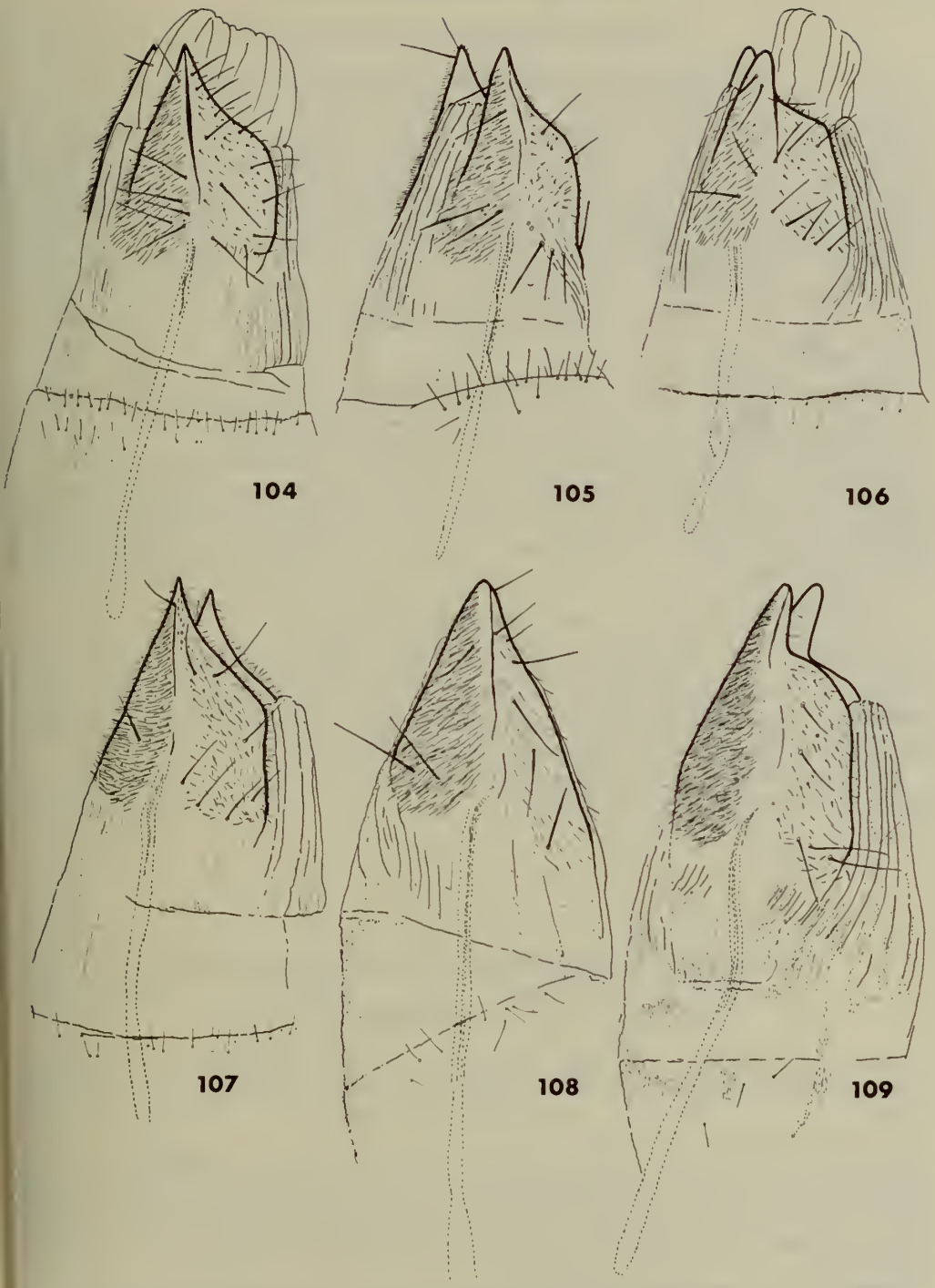
Material examined.

Timora nigrifasciata, LECTOTYPE, here designated, [Kenya] B.E. Africa: Eb Urru, ♂, 16.iv.1900 (*C. S. Betton*); paralectotypes, [Kenya] B.E. Africa: Eb Urru, 1 ♂, 21.iii.1900; 1 ♀, 22.iii.1900; 1 ♀, 23.iii.1900; 1 ♀, 1.iv.1900; 1 ♂, 20.iv.1900, 1 ♀, 30.v.1900 (all *C. S. Betton*). *Timora bimaculata* var. *unifasciata*, holotype, [Tanzania:] Mkalama, ♂, 4.iv.1905 (*Marwitz*), in MNHU, Berlin; paratype, [Tanzania:] Mkalama, ♀, 9.ii.1905 (*Marwitz*), in MNHU, Berlin.

Uganda: W. Ankole, 4500–5000 ft, 1 ♀, 11.x.1911 (*S. A. Neave*); Mbarara, 1 ♂ (*R. E. McConnell*); S.E. Ruwenzori, 3500 ft, 1 ♂, 16.iv.1906 (*G. Legge & A. F. R. Wollaston*); Kenya: Eb Urru, 2 ♂, 22.iii.1900; 1 ♀, 23.iii.1900; 1 ♂, 25.iii.1900; 1 ♂, 26.iii.1900; 1 ♀, 31.iii.1900; 1 ♂, 19.iv.1900 (all *C. S. Betton*); Mt. Elgon, 1 ♀, v.1932 (*T. H. E. Jackson*); Hoey's Bridge, 2 ♂ (*Pitman*); Kavirondo, Suna, 1 ♂, 1 ♀, xi.1930; 1 ♀, i.1931; 1 ♂, iii.1931; 1 ♂, 2 ♀, iv.1931; 4 ♂, xi.1931; 10 ♂, xii.1931; 7 ♂, 2 ♀, i.1932; 1 ♂, ii.1932; 3 ♂, 2 ♀, iii.1932; 9 ♂, 4 ♀, iv.1932; 2 ♂, 2 ♀, v.1932 (all *W. Feather*); 2 ♂, 7 ♀, iv.1932 (*van Someren*); Kitale, 1 ♂, 24.iv.1927; 1 ♂, 17.iv.1931; 1 ♂, (all *G. W. Jeffery*); Lumbwa, 1 ♂, 10.iv.1923 (*G. W. Jeffery*); Nairobi, 1 ♂, 1.vi.1905 (*F. J. Jackson*); 2 ♀, 21.iv.1916 (*W. A. Lamborn*); 5600 ft, 3 ♂, 1 ♀ (*W. N. van Someren*); 1 ♀, iv.1927 (*D. M. Hopkins*); Nakutu, 1 ♂, 1 ♀, 8.v.1911; 1 ♂ (*H. A. Bodeker*); 2 ♂, iv.1940; 2 ♂, iv.1941; 1 ♂, 6.vi.1943; 1 ♂, 17.viii.1944 (all *A. Townsend*); Nandi, Moboroni, 1 ♀, vii.1903 (*F. J. Jackson*); Tanzania: Arusha District, 1 ♀ (*M. S. Moore*); Arusha District, Ngorongoro Crater, 5900 ft, 1 ♂, 2 ♀, iii.1921 (*T. A. Barns*); District of Great Craters, 1 ♂, ii–iii.1921 (*T. A. Barns*); Kigoma, 1 ♂, iv.1961 (*Goodall*); W. Kilimanjaro, 4000–5000 ft, 1 ♂, 1 ♀, ii.iii.1937; 1 ♂, iv.–v.1937 (*B. Cooper*); Musoma, Banagi Hill, 1 ♂ (*M. S. Moore*); Nachingwe, 2 ♂, iv.1961 (*W. Bigger*); Ethiopia: 1 ♂. Specimens with incomplete data 4 ♂, 2 ♀.

Distribution (Map 10). Uganda, Kenya, Tanzania and Ethiopia.

Remarks. *M. b. nigrifasciata* is distinguishable from the nominate subspecies and from *M. b. pluritelifora* on the colour difference of the costal and anal regions. Difference in colour and marking also serves to distinguish most specimens of *M. b. cornia* from *M. b. nigrifasciata*. The range of variation in these two subspecies however, is such that a continuous series can be traced from one to the other. In *M. b. nigrifasciata* there is a shift of tone from dull red toward greyish orange, accompanied by dilution of dark brown from the lower central longitudinal streak (Pl. 9, figs 216, 217). The known intergrade variants were taken from localities on the common borders between the two subspecies.



FIGS 104–109. *M. bimaculata* subspecies, papilla analis of female genitalia. 104, *bimaculata bimaculata*. 105, *bimaculata cornia*. 106, *bimaculata cornia*. 107, *bimaculata pluritelifora*. 108, *bimaculata nigrifasciata*. 109, *bimaculata nigrifasciata*.

Masalia bimaculata cornia subsp. n.

(Text-figs 103, 105, 106; Pl. 9, figs 212–215; Map 10)

Fore wing without areole; length ♂ (10), 10·5–14·5 (holotype), ♀ (2), 12·3–15·4. Wing pattern variable (Pl. 9, figs 212–215). Fore wing upper surface with costal, central and anal regions yellowish white to pale or greyish orange, finely, moderately or densely irrorate with brown. Central region uniform or of different colour to costal and anal regions. Discocellular spot, and lower central longitudinal streak when present, brown. A white upper central longitudinal streak may also be present. Hind wing upper surface yellowish white.

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 103. ♀ papilla analis modified, terminal spines absent, dorso-lateral surface seriate (Text-figs 105, 106).

Material examined.

Holotype, [Congo (Kinshasa):] Luvua River (east Bank), 85 miles North of Lake Mweru, 3000 ft, ♂, iv.1922 (end of wet season) (*T. A. Barns*).

Paratypes. [Angola:] Capelongo, 1 ♂, 20.xii.1912 (Mission Rohan–Chabot), in MNHN, Paris; [Congo (Kinshasa):] Luvua River, 85 miles north of Lake Mweru, 3000 ft, 1 ♂, 1 ♀, ix.1922 (*T. A. Barns*); [Sudan:] Darfur Province, Kulme, 1 ♂, 1921 (*H. Lynes*); Gondokoro, White Nile, 5 ♂, 1 ♀ (*W. E. Reymes-Cole*); Southern Bahr-el-Ghazal, Tambura, 1 ♂.

Distribution (Map 10). Congo (Kinshasa) and Sudan.

Remarks. The presence of a cornutus in this subspecies readily distinguishes it from *M. b. pluritelifora*, whilst the absence of an areole distinguishes it from *M. b. bimaculata*. *M. b. cornia* and *M. b. nigrifasciata* differ in fore wing colour and pattern, but both are variable and intergrade variants do occur.

The name *cornia* was a manuscript name of Miss A. E. Prout and the type selected by her is designated here as holotype.

Masalia bimaculata pluritelifora (Berio) comb. et stat. n.

(Text-figs 102, 107; Pl. 9, figs 220, 221; Map 10)

Timora pluritelifora Berio, 1966 : 110. Holotype ♀, Senegal (MNHN, Paris) [examined].
Timora rosastrigata Berio, 1966 : 111. Holotype ♀, Senegal (MNHN, Paris) [examined].
Syn. n.

Fore wing without areole; length ♂ (8), 11·0–11·8, ♀ (8), 12·2–14·1 (holotype 13·2). Wing pattern as in Pl. 9, fig. 220, 221. Fore wing upper surface with ground colour greyish orange, greyish red, pale red or reddish grey, fine to densely (as in type) irrorate with brown. When present, upper central longitudinal streak white; discocellular spot brown, faint (occasionally indistinguishable against the irrorate ground) to well developed. Hind wing upper surface yellowish white.

Genitalia. ♂ cornutus absent; scobinate bar and proximal end of vesica as in Text-fig. 102. ♀ papilla analis modified, terminal spines absent, dorso-lateral surface sericate (Text-fig. 107).

MATERIAL EXAMINED.

Timora pluritelifora, holotype, SENEGAL: Badi, Parc National Niokola Koba, ♀, 15.vii.–25.ix.1955 (Instit. franc. d'Afrique noire, Dakar), in MNHN, Paris. *Timora rosastrigata*, holotype, SENEGAL: Badi, Parc National Niokola Koba, ♀, 3.ix.1958 (Inst. franc. d'Afrique noire, Dakar), in MNHN, Paris.

SENEGAL: Dakar, 3 ♂, 1 ♀, 10–12.ix.1956 (*C. Rungs*), in MNHN, Paris; Kaolack, 1 ♀, 1909 (*G. Melou*); Sedhiou, 1 ♂, 1 ♀, 1917 (*H. Castell*); GHANA: Northern Territories, Kete-Krachi, 2 ♂, 4 ♀ (*A. W. Cardinall*); NIGERIA: Ogruga [? Ogrugru], River Niger, 2 ♂, 1 ♀.

DISTRIBUTION (Map 10). Senegal, Ghana, Nigeria.

REMARKS. The absence of a cornutus in the male of *M. b. pluritelifora* distinguishes it from the three other subspecies.

MAP 10. Distribution of subspecies of *M. bimaculata*.

Masalia flavocarnea (Hampson) **comb. n.**

(Text-fig. 110; Pl. 9, fig. 222)

Timora flavocarnea Hampson, 1903 : 115. Holotype ♀, Ethiopia (BMNH) [examined].

Fore wing without areole; length ♀ (1), 16·8 (holotype). Wing pattern as in Pl. 9, fig. 222. Fore wing upper surface with ground colour pale to greyish orange, discocellular spot brown. Hind wing upper surface pale yellow irrorate with light brown.

Genitalia. ♀ papilla analis modified; dorso-lateral surface sericate and with terminal spines (Text-fig. 110).

Material examined.

Holotype, [Ethiopia] Abyssinia, ♀.

Distribution. Ethiopia.

Remarks. Within the genus, *M. flavocarnea* can be separated from all but *M. bimaculata* on fore wing colour and marking. *M. flavocarnea* and *M. bimaculata* are separable on the presence and absence respectively of papilla anali terminal spines.

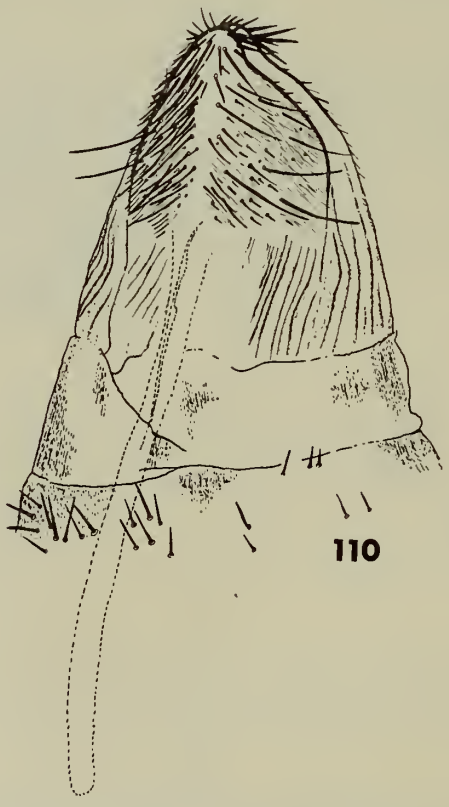


Fig. 110. *M. flavocarnea*, ♀, papilla analis.

Masalia albida (Hampson) comb. n.

(Text-figs 20, 111; Pl. 10, figs 223–225)

Timora albida Hampson, 1905 : 450. LECTOTYPE ♂, ALGERIA (BMNH), here designated [examined]. [Synonymized with *Argyrospila striata* Staudinger, 1897 : 265, by Warren, 1911 : 248; recalled from synonymy by Draudt, 1935 : 197.]

Lecerfia chitinipyga Dumont, 1920 : 102. LECTOTYPE ♂, ALGERIA (MNHN, Paris), here designated [examined]. [Synonymized by Draudt, 1935 : 197.]

Antenna with flagellar segments sexually dimorphic. Proboscis quotient: 6. Fore wing with areole; length ♂ (51), 13·2–15·8 (lectotype 14·3), ♀ (40), 13·9–16·4. Wing pattern as in Pl. 10, figs 223–225. Fore wing upper surface with ground colour greyish yellow to greyish orange. Upper central and anal longitudinal streaks, and costal and anal margins, white. In addition a variable number of white streaks may be present; veins between which streaks occur are: R_4–R_5, R_5–M_1, M_2–M_3, M_3–Cu_{1a} and Cu_{1a}–Cu_{1b}. Hind wing upper surface white to yellowish white, either immaculate or central veins greyish orange. Eighth abdominal tergum with posterior margin centrally incurved; incurved region ridged (Text-fig. 20).

Genitalia. ♂ scobinate bar and cornutus as in Text-fig. 111. ♀ papilla analis simple.

MATERIAL EXAMINED.

Timora albida, LECTOTYPE, here designated, ALGERIA: Hammam-es-Salahin, ♂, 9.iv.1904; paralectotype, ALGERIA: Hammam-es-Salahin, ♀, 16.iv.1904. *Lecerfia chitinipyga*, LECTOTYPE, here designated, [ALGERIA] Algine: El Golea, ♂, in MNHN, Paris.

ALGERIA: east of Guerrara, 1 ♂, 13.iv.1914; El Alia, between Touggourt and Guerrara, 1 ♂, 4 ♀, 12.iv.1914; Hassi Dinar, south of Touggourt, 1 ♀, 11.iv.1914; Hassi Sidi Mahmud, between El Arich and Oued Nga, 1 ♂, 4.iv.1914; Mzab Country, Oued Nga, 1 ♀, 16–30.iv.1914; South Oran, Ain Sefra, 31 ♂, 15 ♀; 3–9.v.191 3;2 ♂,

FIG. 111. *M. albida*, ♂, scobinate bar and cornutus.

1 ♀, 13.v.1915 (*V. Faroult*); Touggourt, 1 ♂, 12.iv.1914; Saudi Arabia: El Riad, 3 ♂, 5 ♀, xi.1958 (*E. Diehl*), in ZSBS, Munich; El Ryadh, 3 ♂, 6 ♀, 18.iii.1958 (*E. Diehl*), in ZSBS, Munich; Jidda, 1 ♂, 13.iii.1929 (*H. St J. B. Philby*); Tihama of Asir, 1 ♀, 27.iii.1948; Iran: Belutschistan, Jranshar, 800 m, 3 ♂, 3 ♀, 1–10.iii.1954 (*Richter & Schäuffele*); 1 ♀, 28–31.iii.1954 (*Richter & Schäuffele*), in ZSBS, Munich.

Distribution. Algeria, Arabia and Iran.

Remarks. The long tongue together with the ridged incurved region of the 8th abdominal tergum readily distinguishes *albida* from other species in this genus.

Masalia perstriata (Hampson) **comb. n.**

(Text-figs 10, 112, 113; Pl. 10, figs 226–230; Map 11)

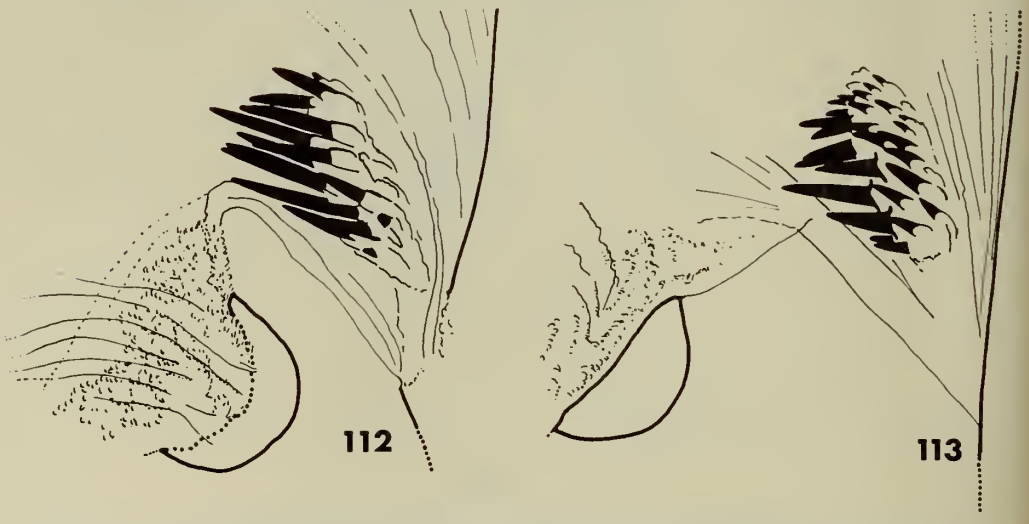
Raghuva perstriata Hampson, 1903 : 32.

Antenna with flagellar segments sexually dimorphic. Proboscis quotient: 5. Fore wing with areole. In the male, the costa dilates at a point a little beyond the centre to form a node. Into this node runs an elongate ridge, which arises from a position anterior to the areole, between R_1–R_4 (Text-fig. 10). The node and ridge are not differentiated in the female.

Genitalia. ♂ scobinate bar and cornutus as in Text-figs 112, 113. ♀ papilla analis simple.

Remarks. The long proboscis together with male characters, the node and ridge in the fore wing and the few but well developed scobinate bar spicules, distinguish *M. perstriata* from other species in the genus.

Three subspecies are recognized, the nominate subspecies from India, *M. p. fuscostriata* from Arabia and Iran, and *M. p. zernytamsia* from east Africa. The nominate subspecies and *M. p. zernytamsia* are marked on the fore wing with a row of terminal dots, which are absent in *M. p. fuscostriata*. No morphological differences have been found between *M. p. perstriata* and *M. p. zernytamsia*.



Figs 112–113. *M. perstriata* subspecies, scobinate bar and cornutus of male genitalia. 112, *perstriata perstriata*. 113, *perstriata fuscostriata*.

Masalia perstriata perstriata (Hampson)

(Text-fig. 112; Pl. 10, fig. 229, Map 11)

Raghuva perstriata Hampson, 1903 : 32. Holotype ♂, INDIA (BMNH) [examined].

This subspecies is known only from male specimens.

Fore wing length, ♂ (2), 13·8–14·0 (holotype). Wing pattern as in Pl. 10, fig. 229. Fore wing upper surface with ground colour yellowish white to pale yellow; postmedial and terminal dots and the rather faintly marked lower central, longitudinal streak, brown. Hind wing upper surface white to yellowish white.

MATERIAL EXAMINED.

Holotype, INDIA: [Himachal Pradesh.], N. W. Himalayas, Fort Kangra, ♂, 17.vii.1884 (*Moore*).

INDIA (southern): Gooty, 1 ♂ (*W. H. Campbell*).

DISTRIBUTION (Map 11). India.

REMARKS. The presence in *M. p. perstriata* of brown terminal dots distinguishes it from *M. p. fuscostriata*, in which these dots are absent. Morphological differences have not been found between *M. p. perstriata* and *M. p. zernytamsia*. These two subspecies are geographically separated by *M. p. fuscostriata* (Map 11).

MAP 11. Distribution of subspecies of *M. perstriata*.

Masalia perstriata fuscostriata (Brandt) comb. et stat. n.

(Text-fig. 113; Pl. 10, figs 226–228; Map 11)

Timora fuscostriata Brandt, 1914 : 854. LECTOTYPE ♂, Iran (NR, Stockholm), here designated [examined].

Fore wing, length ♂ (3), 14·3–15·4 (lectotype), ♀ (3), 15·2–17·0. Wing pattern as in Pl. 10, figs 226–228. Fore wing upper surface with ground colour white to yellowish white; costal and anal regions fine to moderately irrorate with brown; lower central longitudinal streak either straight or distad-splayed and postmedial dots, when present, brown. Hind wing upper surface white to yellowish white.

Material examined.

LECTOTYPE, here designated, Iran: Baloutchistan, Bender Tchahbar, ♂, 27.ii.–3.iii.1938 (*Brandt*), in NR, Stockholm; paralectotypes, Iran: Baloutchistan, Bender Tchahbar, 1 ♂, 1 ♀, 27.ii.–3.iii.1938 (*Brandt*), in NR, Stockholm; 1 ♂, 1 ♀, 16 and 20.ii.1938 (*Brandt*), in ZSBS, Munich.

Saudi Arabia: Rada, 1 ♀, 4.ix.1962 (*G. Popov*).

Distribution (Map 11). Saudi Arabia and Iran.

Remarks. The absence of fore wing terminal dots in *M. p. fuscostriata* distinguishes it from the two other subspecies, *M. p. perstriata* and *M. p. zernytamsia*, in which brown terminal dots are present.

Masalia perstriata zernytamsia (Berio) comb. et stat. n.

(Pl. 10, fig. 230; Map 11)

Timora zernytamsia Berio, 1939 : 60. Holotype ♀, Somali Republic: Belet, 15.vii.1934 (*Patrizi*) (MCSN, Genoa).

Fore wing, length ♂ (12), 11·8–14·7, ♀ (14), 14·0–15·5. Wing pattern as in Pl. 10, fig. 230. Fore wing upper surface with ground colour yellowish white to pale yellow, anal region occasionally irrorate with brown; postmedial and terminal dots and lower central longitudinal streak brown. Hind wing upper surface white to yellowish white.

Material examined.

Ethiopia: El Dire, Sagan-Omo, 1 ♀, in MCSN, Genoa; Dire Daoua, 10 ♂, 13 ♀, xii.1934, or iv.–ix.1935 (*H. Uhlenhuth*); Kenya: Isiolo, 2 ♂, (*H. Copley*).

Distribution (Map 11). Somali Republic (type-locality), Ethiopia and Kenya.

Remarks. Morphological differences between *M. p. zernytamsia* and *M. p. perstriata* have not been found. They occur in different regions, *M. p. zernytamsia* in Africa, *M. p. perstriata* in India. Lying between them geographically is the third subspecies, *M. p. fuscostriata* (Map 11). *M. p. zernytamsia* and *M. p. fuscostriata* are separable on the presence and absence, respectively, of a row of fore wing terminal dots.

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